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Mr. F. O. Taylor, First Vice-President Elect of the AMERICAN PHARMACEUTICAL ASSOCIATION, was born in the town of Philadelphia, Cass County, Illinois, and later lived in the states of Missouri, Kansas and Kentucky. He attended the Hughes High School in Cincinnati, and later the Cincinnati College of Pharmacy, where he graduated in 1901 with the degrees of Ph.B. and Ph.C. Following his graduation he taught for a year at his alma mater before going to Parke, Davis & Co., where he is now Chief Chemist and as such is responsible for the quality and strict adherence to label claims of all products manufactured by the company. He entered the services of Parke, Davis & Co. in 1902 as a member of the staff of the Analytical Department, and has been successively a research chemist, manager of the Chemical Manufacturing Department, Assistant Chief Chemist and Chief Chemist, the latter since 1924.

Mr. Taylor is a Life Member of the AMERICAN PHARMACEUTICAL ASSOCIATION, having joined in 1912, has been a member of the American Chemical Society since 1908 and for many years of the American Association for the Advancement of Science. He is also active in the American Drug Manufacturers Association, has been chairman of their Scientific Section, chairman of the Medicinal Products Division of the American Chemical Society and chairman of the Detroit Section of the American Chemical Society. At the present time he is on the teaching staff of Wayne University College of Pharmacy as a special instructor in graduate work in Pharmaceutical Chemistry. He is a charter member of the Michigan Branch, A. PH. A., coöperating member of both past and present U. S. P. and N. F. Revision Committees and a contributor to "Allen's Commercial Organic Analysis," and "Annual Surveys of American Chemistry."

Mr. Taylor has taken an active interest in all efforts to establish and improve standards for drugs and medicines and has contributed to the progress made in this field.

EDITORIAL

E. G. EBERLE, EDITOR EMERITUS. 2215 Constitution Ave., WASHINGTON, D. C.

THE NATIONAL HEALTH ACT OF 1939.

THE NATIONAL HEALTH PROGRAM was carried forward recently through the submission to the Congress of the Report of the Interdepartmental Committee to Promote and Coördinate Health Activities and the introduction, on February 28th, of S. 1620, under the title used above, by Senator Wagner of New York.

In submitting the Report to the Congress in a special message, President Roosevelt stated that the purpose of the Program is "to make available in all parts of our country and for all groups of our people the scientific knowledge and skill at our command to prevent and care for sickness and disability; to safeguard mothers, infants and children, and to offset through social insurance the loss of earnings among workers who are temporarily or permanently disabled."

It will be recalled that this Report was the subject of consideration by the National Health Conference in Washington, D. C., in July 1938.

The following quotations are taken from the statement made by Senator Wagner in introducing S. 1620: "Under no circumstances will the Federal government undertake to furnish medical care. Administration in all cases will be through the States, which will develop their plans only after careful surveys of local needs and conditions, and with a view to supplementing, not displacing, the existing efforts of the professions, the hospitals, the localities and charitable organizations.....

It should be clearly understood that the bill does not establish a system of health insurance or require the States to do so. Specifically, under title XIII of the bill, dealing with general programs of medical care, the States will be free to develop plans of their own choosing, subject to necessary basic standards. Such plans may be limited to those on relief or include others more fortunately situated in the economic scale. The plans may be supported by insurance contributions, by general revenue, or both.

The bill does not interfere with the States in the licensing of medical or other practitioners. It seeks to maintain and improve the high professional standards of medical and institutional care already achieved in the United States. All State plans under the respective titles must provide methods of administration to this end. At every stage of State and Federal administration, including the formulation as well as the effectuation of State plans, provision is made for consultation with professional advisory councils, composed of members of the professions and agencies, public and private, that furnish the particular services and other persons informed on the need for, or provision of, such services."

The purpose of the bill is "To provide for the general welfare by enabling the several States to make more adequate provision for public health, prevention and control of disease, maternal and child health services, construction and maintenance of needed hospitals and health centers, care of the sick, disability insurance and training of personnel." This is accomplished through proposed amendments to the Social Security Act providing for allotments to the states for which $80,000,000

is appropriated for the fiscal year ending June 30, 1940, and larger amounts in the two succeeding years.

The bill covers, in a general way, the five definite recommendations made in the Report referred to above:

1. (*a*) Maternal and Child Health Services and (*b*) Medical Services for Children and Services for Crippled and Other Physically Handicapped Children. This title is to be administered by the Chief of the Children's Bureau who shall make payments to those states which have submitted to and had approved by the Chief of the Bureau, plans for extending and improving such services. The following factor for each state shall be taken into consideration: (1) The total number of births in the latest calendar year for which the Bureau of the Census has available statistics; (2) the number of mothers and children in need of the services; (3) the special problems of maternal and child health; and (4) the financial resources.

2. Public Health Work and Investigations for the Purpose.

"For the purpose of enabling each State, as far as practicable under the conditions in such State, especially in rural areas and in areas suffering from severe economic distress, to extend and improve public-health work, including services, supplies and facilities for the control of tuberculosis and malaria, for the prevention of mortality from pneumonia and cancer, for mental health and industrial hygiene activities, and to develop more effective measures for carrying out the purposes of this part of this title, including the training of personnel." This title is to be administered by the Surgeon General of the Public Health Service who shall make payments to those states which have submitted to and had approved by the Surgeon General, plans for extending and improving such services. The following factors for each state shall be taken into consideration: (1) The population; (2) the number of individuals in need of the services; (3) the special health problems; and (4) the financial resources.

3. Grants to States for Hospitals and Health Centers. This title is to be administered by the Surgeon General of the Public Health Service who shall allot sums to those states which have submitted to and had approved by the Surgeon General, plans for constructing and improving needed hospitals. The following factors for each state shall be taken into consideration: (1) The needed additional hospitals; and (2) the financial resources.

4. Grants to States for Medical Care "For the purpose of enabling each State, as far as practicable under the conditions in such State, especially in rural areas and among individuals suffering from severe economic distress, to extend and improve medical care (including all services and supplies necessary for the prevention, diagnosis and treatment of illness and disability), and to develop more effective measures for carrying out the purposes of this title, including the training of personnel."

This title is to be administered by the Social Security Board which shall make payments to the states which have submitted to and had approved by the Board, plans for extending and improving medical care. The following factors for each state are to be taken into consideration: (1) The population; (2) the number of individuals in need of the services; (3) the special health problems; and (4) the financial resources.

5. Grants to States for Temporary Disability Compensation. This title is to be administered by the Social Security Board which shall make payment to those states which have submitted to and had approved by the Board, plans for temporary disability compensation. The cost benefits will be payable to individuals for not more than fifty-two weeks and with respect to their disability not arising out of or in the course of employment.

Under each title, except the fifth, it is required among other things that an approved plan shall provide for financial participation by the State; for a statewide program or an extension of such program so that it shall be in effect in all political subdivisions of the state in need of the services not later than the fiscal year ending June 30, 1945; for the administration of the plan by the state health agency or other agency or for the supervision of the plan by this agency. Under the fifth title, it is required that the state shall have a satisfactory plan for temporary disability compensation which makes available "reasonably adequate medical services, including preventive services," to minimize disability.

Under the first three titles an approved state plan shall provide for an advisory council or councils, composed of members of the professions and agencies, public and private, that furnish services under the state plan, and other persons informed on the need for, or provision of, medical care. Under the fourth title a Federal advisory council or councils, is provided for. These provisions will give the public health professions the opportunity to advise the State or Federal agency with respect to the services to be rendered and will connect these professions directly with the operation of the plan.

It must be evident that, if adopted, the National Health Act of 1939 will put into operation in the states and under Federal supervision, an expanding health program which will include many services that are not now being rendered and that such a program will affect the public health professions. It is important, therefore, that these professions, including Pharmacy, should carefully study the progress of this legislation and be prepared to take such action as may be required by the developments.

This ASSOCIATION has for several years past urged the State Pharmaceutical Associations to secure representation on their respective State and Local Boards of Health for the purpose of giving such boards the active coöperation of the profession and of bringing the profession into direct contact with public health progress. The development of a National Health Program and the introduction of S. 1620 emphasizes the importance of pharmaceutical representation on State and Local Boards of Health.—E. F. K.

A member of the AMERICAN PHARMACEUTICAL ASSOCIATION comments as follows:

"I enjoyed the greatest inspiration of thirty-eight years in Pharmacy while attending the A. PH. A. convention in Minneapolis last August. I have been a member for twenty years, but that was my first A. PH. A. convention and it was worth waiting twenty years to get a chance to attend. I never believed it possible to get together so many helpful, pharmacy-minded people under one roof for a period of one week."

SECTIONS

BOARD OF REVIEW OF PAPERS (SCIENTIFIC SECTION).—*Chairman*, F. E. Bibbins; H. M. Burlage, W. G. Crockett, E. V. Lynn, C. O. Lee, L. W. Rising, L. W. Rowe, Heber W. Youngken, Ralph E. Terry, Carl J. Klemme.

MICROSCOPY OF WAXES AND WAX CONSTITUENTS.*

BY HARRY TAUB AND SAMUEL ZWEIG.[1]

The purpose of this investigation is to develop a rapid method for identification as well as determination of adulterants in the commonly used waxes. Due to the complexity as well as variation in composition, the determination of adulterants in waxes by ordinary chemical or physical means is no easy task. It is, therefore, hoped that a suitable microchemical method may be evolved which will prove useful for this purpose.

Watson (1) was able to detect as little as 0.5% of carnauba wax in beeswax by the change of the crystalline appearance when crystallized from *n*-butyl alcohol. Microchemical work on oils and fats has been done by Rosenthaler (2,3), Greene (4,5), Butcher (6) and Mehlenbacher (7). The procedure for oils is to mix a drop of oil with a drop of reagent on a slide, cover with a cover slip and allow to stand until crystals appear. Due to the difference in consistencies this procedure cannot be applied to waxes. The latter, however, can be dissolved in a suitable solvent at the solution temperature of the particular wax and allowed to cool slowly and spontaneously to room temperature. The crystals are slowly formed and allowed to grow while the solution is cooled. If too rapid cooling or chilling takes place, the crystals formed are small, deformed and not characteristic. Care, therefore, should be taken to allow slow and uniform cooling of all test-tubes in order to obtain duplicable results.

Since most waxes are mixtures of various substances, one would expect to find different types of crystal formations as each constituent comes out of solution. This, however, is not the case, and in many solvents only one type of crystal formation results, *i. e.*, the entire mixture crystallizes in one form depending upon the type of constituents present, the concentration and the reagent used. When crystallized from *n*-butyl alcohol, the waxes act in this manner. On the other hand, when monoamylamine[2] is used as the solvent, well-formed crystals, often of more than one type, are produced. Monoamylamine also has the advantage of being able to react chemically with the free fatty acids present in waxes resulting in formation of monoamylamine esters. The esters of the lower fatty acids such as palmitic, stearic, etc., are extremely soluble and remain in solution. The esters of the higher fatty acids, such as cerotic, melissic, etc., are insoluble, and may crystallize out in their own characteristic crystal forms. It is therefore apparent that monoamylamine, due to its dual nature of solvent and chemical reagent, should be a suitable substance for wax crystallography.

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* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.

[1] Columbia University, College of Pharmacy, Dept. of Materia Medica.

[2] Manufactured by Sharples Solvents Corp., Philadelphia, Pa.

PROCEDURE.

The quantity of each wax used varies with the solubility of the individual waxes. It was found that 0.1 Gm. of all waxes except carnauba (0.05 Gm.), and spermaceti (0.5 Gm.) was a satisfactory amount. The waxes are placed in a test-tube of uniform bore, about $^5/_8$" in diameter and 6" long. 5 cc. of monoamylamine or 10 cc. of *n*-butyl alcohol are added. The test-tubes are then placed in a bath which has previously been heated to a temperature sufficient to dissolve the most insoluble wax. This temperature was found to be 65° C. for monoamylamine and 85° C. for *n*-butyl alcohol, at which points the most insoluble carnauba and ozokerite remained in solution. One of the requirements of the experiment is that the temperature of the solutions shall now be allowed to drop to room temperature in the course of about four to five hours. For this a suitable bath is required. Watson (1) describes an apparatus consisting of two beakers and a perforated metal disk, which is probably the most suitable for this purpose. However, the ordinary water-bath of 1500 cc. capacity, filled with 1000 cc. of water and fitted with a perforated metal disk

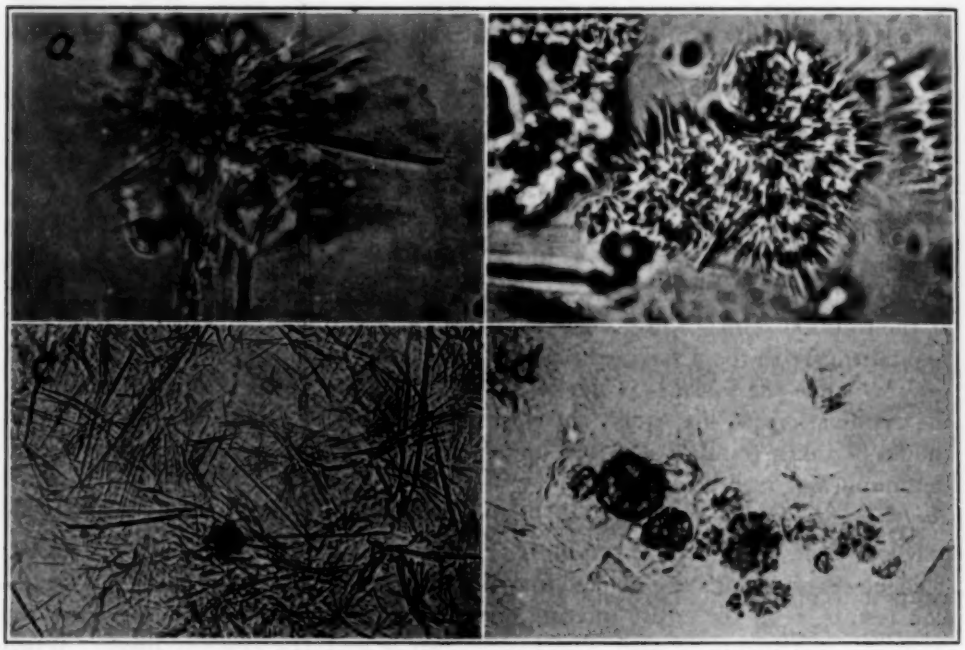

Fig. I.—(a) and (b) Crystals of beeswax from monoamylamine (600 X); (c) Beeswax from *n*-butyl alcohol (600 X); (d) Rosettes of Ozokerite crystallized from monoamylamine (300 X).

capable of supporting 12 test-tubes, was used in the authors' laboratory, and was found very satisfactory. After the solutions come to room temperature they should be allowed to stand for 24 hours before being examined. In all cases, with the exception of candelilla wax, the crystals settle to the bottom of the test-tubes. Then, without disturbing or stirring the sediment too much, a small amount of the solid is removed by means of a long pipette, placed on a slide and examined with the microscope. It was found that violent stirring or pressing down with the cover slip sometimes disintegrated the larger crystal aggregates and therefore this should be avoided as much as possible.

RESULTS.

The photomicrographs accompanying this report do not in all cases represent the entire crystal picture of the wax in question. In some instances, notably candelilla wax, only the characteristic segmented rosettes were photographed and the more abundant needle crystals are not very apparent in the picture. One should, therefore, not rely completely on the photomicrographs but reference should be made to the descriptions that follow.

Ozokerites (Yellow and White).—Crystallize from monoamylamine in the form of spherical compact rosettes consisting of small, thick needles; also individual needles with tendency to aggregate and form a stellate arrangement (Fig. Id).

Beeswax, White and Yellow.—Crystals are of two types when monoamylamine is used: (*a*) Individual, long, slender needles sometimes radiating from a common center (as shown in Fig. Ia). (*b*) Very small spindle-shaped needles aggregated to form either a spherical or wavy arrangement, the latter resembling hairy caterpillars (Fig. Ib).

From butyl alcohol, beeswax crystallizes in the form of long slender acicular crystals haphazardly arranged (Fig. Ic). Some circular amorphous-like bodies are also present.

Candelilla Wax.—In monoamylamine two types of crystals are formed: (*a*) Slender, curved needles, singly or in stellate arrangement, similar to those obtained from butyl alcohol (Fig. IIb). (*b*) Spherical bodies with markings similar to those found in carnauba wax as shown in Fig. IIa.

From butyl alcohol slender curved needles, as described above, are obtained (Fig. IIb).

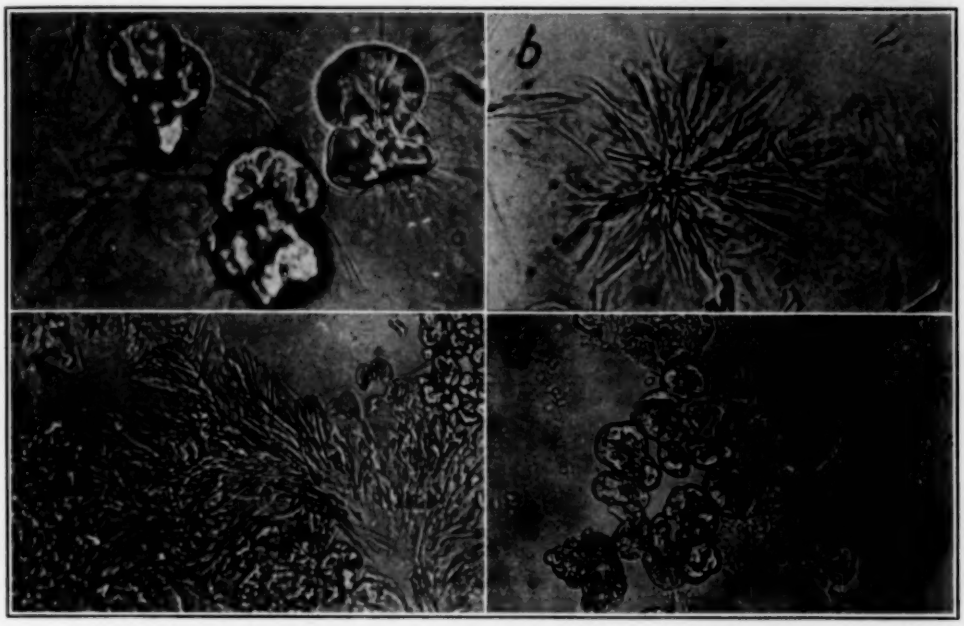

Fig. II.—(a) Candelilla wax from monoamylamine (600 X); (b) Candelilla wax from *n*-butyl alcohol (600 X); (c) Carnauba wax from monoamylamine (300 X); (d) Carnauba wax from *n*-butyl alcohol (300 X).

Carnauba Wax.—Crystallizes from monoamylamine in the form of: (*a*) Long slender needles in the form of sheaves (Fig. IIc). (*b*) Small segmented spherical rosettes with a white wax-like appearance, as in Fig. IId.

From butyl alcohol the crystals are similar to the rosettes obtained from monoamylamine (Fig. IId).

Soap Crystals.—When a solution of KOH in *n*-butyl alcohol is added in small amount to a dilute solution of stearic acid[1] in *n*-butyl alcohol, potassium stearate precipitates out in the form of slender needles haphazardly arranged. However, if the reagent is added in excess to a more concentrated solution of stearic acid in butyl alcohol, a translucent gel is formed, which, when allowed to stand over night, is converted into a crystalline precipitate. These crystal aggregates (Fig. IIIa and b) show a characteristic weave-like formation, with the individual needle crystals crossing each other at an oblique angle and forming an interwoven meshwork.

Palmitic acid and cerotic acid do not produce this type of crystal formation (Fig. IIIc).

[1] Commercial triple pressed stearic acid.

Cerotic Acid in Monoamylamine (the compound monoamylamine cerotate is probably formed) shows crystal formations which appear like sections of a square prism, the crystals belonging to the tetragonal system (Fig. IIId). These tend to aggregate and form sheaf-like groups of superimposed crystals.

Wax Mixtures.—As already stated above, waxes, although consisting of mixtures of various substances, usually show but one or at most two types of crystal formations. This phenomenon is also true of mixtures of two or more waxes. It was found that the presence of one wax in another influenced a change in crystal forms; this change consisted of a readily apparent modification of the original crystals. Therefore, although one could not pick out microscopically the characteristics of each individual wax in the mixture, yet, from the change in appearance of the

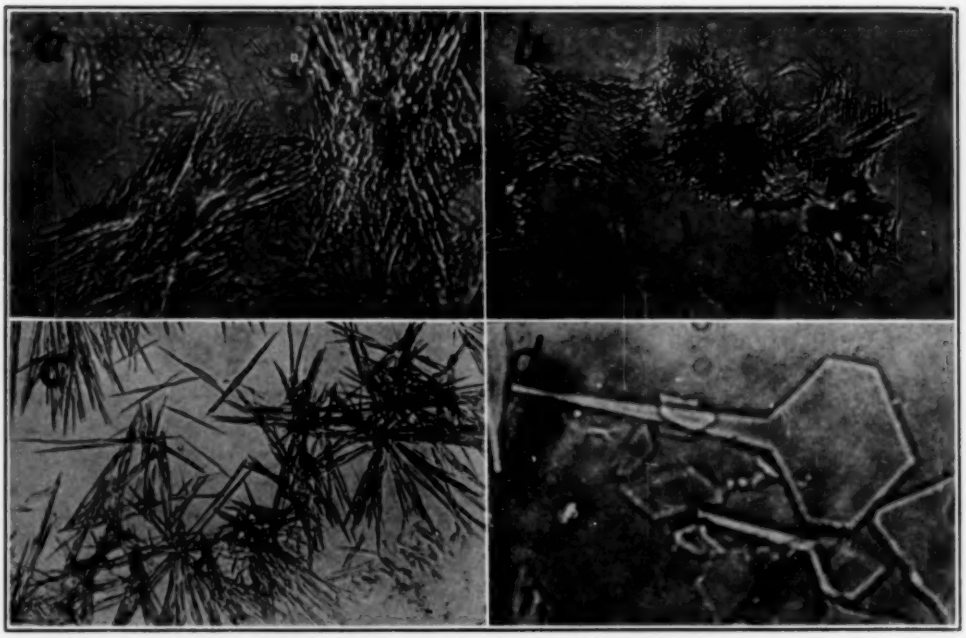

Fig. III.—(a) and (b) Potassium Stearate crystallized from *n*-butyl alcohol after being treated as described (400 X); (c) Potassium Palmitate from *n*-butyl alcohol (200 X); (d) Cerotic acid from monoamylamine (600 X).

crystal structures, the added wax may be inferred. The above facts have been demonstrated for mixtures of two waxes only; further work is being done on more complex mixtures.

The following compositions were prepared and examined:

1. 75% Beeswax+25% Carnauba Wax
2. 25% Beeswax+75% Carnauba Wax
3. 75% Beeswax+25% Candelilla Wax
4. 25% Beeswax+75% Candelilla Wax
5. 75% Beeswax+25% Bleached Montan
6. 25% Beeswax+75% Bleached Montan
7. 75% Beeswax+25% Paraffin
8. 25% Beeswax+75% Paraffin
9. 75% Beeswax+25% Ozokerite
10. 25% Beeswax+75% Ozokerite

RESULTS.

1. 75% Beeswax+25% Carnauba Wax.—Acicular crystals, aggregating around a central axis rather than from a point, giving rise to the caterpillar-like formations described under beeswax (Fig. IIb), but having a rounded outline with almost no projecting needles. The small spherical rosettes are denser, with the outline less serrate, than those of pure beeswax. The carnauba addition is further manifested by the crystals in sheaf segments as shown in Fig. IIc. In general, as will be seen later, the addition of a harder and less soluble wax to beeswax causes a suppression of the fine hairy needles projecting from the rosettes and other aggregate forms of beeswax.

2. 25% Beeswax+75% Carnauba Wax.—The crystal appearance is almost similar to pure carnauba and the presence of beeswax is not very apparent. It therefore follows that although it would be difficult to detect beeswax in carnauba by this method, it should, however, be possible to detect carnauba in beeswax.

3. 75% Beeswax+25% Candelilla Wax.—The typical beeswax crystal aggregate (Fig. Ib) has completely lost its fuzziness. It is now very compact and smooth in outline. Candelilla is apparent from the presence of wax-like spherical or bean-shaped bodies (Fig. IIa). The absence of the sheaf-like structures described in mixture No. 1, differentiates candelilla from carnauba.

4. 75% Candelilla+25% Beeswax.—Nothing very characteristic is apparent. Here again the presence of candelilla in beeswax is detectable but the reverse is not.

5, 6, 7 and 8.—The addition of Bleached Montan or Paraffin to Beeswax results in formation of large rosettes made of short, coarse and distinct acicular crystals. The aggregates similar to beeswax (Fig. Ib) are more pilose in appearance. The crystals in general are much larger than in pure beeswax. The large acicular crystals, which were numerous in beeswax both individually and in rosettes (Fig. Ia), are entirely absent. The effect of adding montan or paraffin to beeswax is opposite to the effect produced by candelilla or carnauba additions.

9. 75% Beeswax+25% Ozokerite.—The 25% ozokerite has an effect on beeswax crystal structures similar to candelilla and carnauba. It can, however, be differentiated from the two by the absence of the characteristics of carnauba and candelilla as described above (mixtures No. 1 and No. 3).

10. 25%Beeswax+75% Ozokerite.—Compact rosette forms typical of ozokerite (Fig. Id) consisting of short needles; also large rosettes consisting of distinct, slender acicular crystals, similar to those found in beeswax (Fig. Ia).

CONCLUSION.

Although at the present stage of the investigation it may be difficult to determine qualitatively all waxes present in an unknown mixture, it should however be possible to identify one or two waxes in such mixture by following the procedure outlined. Other physical or chemical methods such as solubility, melting point, saponification value, acid value, etc., may then be resorted to for positive identification of all ingredients.

SUMMARY.

Wax crystals are obtained by dissolving the wax in a suitable solvent at the solution temperature of the wax in question and allowing to cool spontaneously to room temperature. Although the waxes represent mixtures of several constituents, yet, each wax will tend to produce just one or, at most, two types of crystal formations. Monoamylamine, due to its dual nature of solvent and chemical reagent, was found very suitable for wax crystallography. *n*-Butyl alcohol was also used as the solvent. Some typical crystal formations were obtained with beeswax, carnauba wax, candelilla wax and ozokerite, when monoamylamine was used as the reagent. Odd type of crystal formations were obtained from potassium stearate in *n*-butyl alcohol and from cerotic acid in monoamylamine. In mixtures of waxes some idea of the main constituents present may be obtained from the appearance of the crystal formations.

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A CONTRIBUTION TO THE PREPARATION AND CHEMISTRY OF 6-AMINOQUINOLINE.*

BY GEORGE W. HARGREAVES,[1] A. B. MARSHALL AND W. W. WHORTON.

Para or 6-aminoquinoline was originally desired as a possible source of the 5,6-quinoline quinone either by direct oxidation in a manner similar to the corresponding hydroxy compound (1) or indirectly by conversion into the hydroxy compound by diazotization and hydrolysis. The 6-nitro compound is readily prepared in fairly good yields in the Skraup reaction on *p*-nitraniline. 6-Aminoquinoline was originally prepared by LaCoste (2) by the reduction of the corresponding nitro compound with tin and hydrochloric acid and decomposing the tin double salt formed with hydrogen sulfide. A modification of this method, using stannous chloride, was found to be impractical when workng with as much as ten Gm. quantities because of the poor yields and the difficulty encountered in the precipitation and removal of the tin sulfide. This problem was solved by decomposing the tin double salt with alkali and extracting the amino compound with ether. Reduction with powdered iron and glacial acetic acid according to Claus and Schnell (3) was not satisfactory, neither was the use of alcoholic ammonium sulfide as employed by Magidson and Strukow (4) with the 6-alkoxy-8-nitroquinolines. Sulfonation of 6-aminoquinoline was studied in an attempt to produce a quinoline type of sulfanilamide. The 6-amino-5-sulfonic acid has been made by Cybulski and co-workers (5) using 25–40% oleum. Attempts to sulfonate 6-amino-quinoline with concentrated sulfuric acid and with oleum below this strength were unsuccessful. It, however, was found to react readily with chlorosulfonic acid. The action of chlorosulfonic acid on other aminoquinolines is also being studied in this laboratory.

6-Nitroquinoline.—This was prepared by Knueppel's (6) modification of the Skraup reaction as revised by Capps (7) using technical *p*-nitraniline. Yields as high as 50% were obtained. Recrystallized from dilute alcohol, it melts at 149°. It was found best to use the recrystallized product in the subsequent reduction as higher yields of a better product were obtained than when the crude nitro compound was used.

6-Aminoquinoline.—17.4 Gm. of 6-nitroquinoline was dissolved in 100 cc. of hot conc. HCl and to it was slowly added 90 Gm. of stannous chloride dissolved in 100 cc. of conc. HCl. After allowing the mixture to cool, the precipitated crystalline tin double salt was filtered off and sucked as dry as possible, dissolved in 75 cc. of water, made faintly alkaline with 5*N* NaOH solution and completely extracted with ether in a separatory funnel. 6-Aminoquinoline dissolves readily in ether forming solutions with a strong bluish fluorescence which serves as an indicator in the extraction. This fact has not been previously reported in the literature. The ether was distilled from the combined extracts and the crystalline residue dissolved in as small a quantity of hot alcohol as possible and poured into an evaporating dish for crystallization. Yield 13 Gm. or 90%. Melting point 114°.

6-Aminoquinoline has also been prepared by reduction of the nitro compound with powdered iron in alcoholic solution in the presence of calcium chloride (8), from 6-hydroxyquinoline by heating with ammoniacal zinc chloride in a tube at 270–280° (9) and by warming the hydrochloride of 6-nitroso-1,2,3,4-tetrahydroquinoline with water (10).

Diazotization of 6-Aminoquinoline.—4.8 Gm. ($^1/_{10}$ mole) of 6-aminoquinoline was dissolved in 100 cc. of water and 10 cc. of conc. HCl. The solution was allowed to cool and enough ice added to bring the temperature range within 0–5°. A cold solution of 20% sodium nitrite was then added until a slight excess was indicated by starch-iodide paper.

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[1] School of Chemistry and Pharmacy, Alabama Polytechnic Institute, Auburn, Ala.

Definite proof of the diazotization of this compound was demonstrated in this laboratory by Bostick (11) who prepared several azo dye derivatives, the quinoline-6-azo-betanaphthol compound being a red crystalline substance melting at 199°.

Attempted Replacement of the Diazonium Group by Hydroxyl.—The diazonium solution was poured into 50 cc. of boiling 6*N* HCl. Nitrogen was evolved and the addition required several minutes to avoid boiling over the solution. The resulting solution was cooled and neutralized with sodium hydroxide solution. The slight cloudy precipitate formed, when filtered, proved to be a red tarry mass, difficult to filter and upon standing resulted in a plastic-like substance of a deep red color. No melting point could be obtained from the tar-like substance.

This method was varied by gradually decreasing the acid concentration to 0.1*N* HCl and finally substituting distilled water but the results were the same in every case. The use of sulfuric acid in the diazotization and attempted hydrolysis gave the same results. This is similar to the results obtained by Claus (12) with 5-amino-6,8-dibromquinoline.

When 2*N* NaOH was substituted for the hydrochloric acid, a white amorphous precipitate was obtained. Attempts at purification gave no clue as to its identity. No hydroxyquinoline could be isolated from the mass.

Attempts to replace the diazonium group with chlorine and the arsonic acid group were also unsuccessful.

Oxidation of 6-Aminoquinoline.—Oxidation of 6-aminoquinoline with lead peroxide and dilute sulfuric acid (1) yielded deep red solutions which did not give the characteristic green color with ammonia and from which no quinone sulfate could be isolated. This reaction is still being studied.

Action of Chlorosulfonic Acid on 6-Aminoquinoline.—20 Gm. of chlorosulfonic acid was poured cautiously onto 4 Gm. of the aminoquinoline and allowed to stand for 15 minutes. The reaction mixture was then heated over a low flame for 5 minutes. On cooling, it was poured cautiously onto 50 Gm. of cracked ice. A yellow precipitate resulted which was collected and thoroughly washed with cold water. Yield 5.5 Gm. or 92–93%. Melting point 173–174°. This substance is only very slightly soluble in water and alcohol and practically insoluble in ether, acetone, chloroform and benzene. In the absence of a satisfactory analysis, it is being tentatively reported as 6-aminoquinoline-5-sulfonechloride.

6-Aminoquinoline-5-sulfonic acid.—The compound obtained above was dissolved in 10% NaOH solution and then made slightly acid with HCl. A precipitate of yellow crystalline scales resulted in practically a quantitative yield. It decomposed above 230°. This agrees with the data of Cybulski and co-workers (5). It is only very slightly soluble in water and alcohol and practically insoluble in ether, chloroform, acetone and benzene. Its water solution has a greenish fluorescence.

SUMMARY.

1. 6-Aminoquinoline is produced in good yields by the reduction of the corresponding nitro compound with stannous chloride, decomposing the tin double salt with alkali and extracting with ether.

2. The amino compound is readily diazotized but attempts to convert the diazonium compound to the hydroxy compound have been unsuccessful.

3. Oxidation of the aminoquinoline in a manner similar to the hydroxy compound does not yield the 5,6-quinone.

4. 6-Aminoquinoline is not sulfonated by concentrated sulfuric acid or oleum of less than 20% but it reacts readily with chlorosulfonic acid.

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THE ASSAY OF SPIRIT OF CAMPHOR.*

BY O. GISVOLD.**

The U. S. P. XI method of assay for camphor in spirit of camphor has proven very unsatisfactory. E. M. Plein and C. F. Poe[1] report studies of this assay, show that the official method is unsatisfactory and recommend a method that is very similar to the one presented in this paper. Since this problem was under investigation at the time Plein and Poe reported their results, it seemed desirable to present the findings in this laboratory.

The dinitrophenylhydrazine reagent when prepared according to the U. S. P. XI is very unstable. About one-half of the reagent crystallizes out upon standing over night. When this half-strength reagent was used in the assay of spirit of camphor, very low results were obtained. *First*, because the camphor sublimed into the reflux condensor and *second*, because an insufficient amount of dinitrophenylhydrazine was present to insure complete combination with all camphor. A freshly prepared one and one-half per cent reagent also gave very unsatisfactory results.

The addition of either methyl or ethyl alcohol increased the yield of the dinitrophenylhydrazone. It was found that 25 per cent methyl alcohol was a very satisfactory solvent for the preparation of the one and one-half per cent dinitrophenylhydrazine reagent of the U. S. P. XI. This reagent is stable for some time.

The following procedure gave good results. Two cc. of the spirit of camphor were pipetted into 75 cc. of the reagent. The mixture was refluxed on a steam-bath for two hours. A Hoffmann distilling head was attached to the flask and the mixture heated at such a rate that 15 to 17 cc. of alcohol were distilled in a period of one-half hour. Fifty cc. of 5 per cent sulfuric acid were added to the flask and the mixture allowed to cool. An additional 150 cc. of 5 per cent sulfuric acid were added and the mixture allowed to stand over night. The derivative was collected in a tared fritted-glass filter funnel (No. 3) and dried to constant weight at 100°.

The derivative can readily be washed from the fritted-glass filter funnel with chloroform and the funnel can be used repeatedly without retaring.

This procedure was used in the analyses of accurately prepared 8, 10 and 12 per cent spirits. These results, together with those obtained using the U. S. P. XI and the Plein and Poe methods, are tabulated below.

U. S. P. XI Method.	Plein and Poe Method.	Modified Method.
	Eight per cent spirit.	
6.44	7.91	7.88
7.66	7.92	7.81
6.49	8.00	7.95
7.72	8.02	7.85
Av. 7.08	Av. 7.96	Av. 7.87

* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.

** From the Department of Pharmaceutical Chemistry, College of Pharmacy, University of Minnesota, Minneapolis, Minn.

[1] *Ind. Eng. Chem.* (Analyt. Ed.), 10, 78 (1938).

	Ten per cent spirit.	
7.84		9.86
9.58		9.85
10.42		9.87
10.68		9.84
Av. 9.63	9.80*	Av. 9.86
	Twelve per cent spirit.	
8.45	11.63	11.75
7.68	11.68	11.77
7.80	11.60	11.80
8.80	11.60	11.82
Av. 8.38	Av. 11.63	Av. 11.79

* Average of fifty determinations by five analysts.

A few assays were conducted using a 5-cc. sample and a 2 per cent reagent. Satisfactory results were obtained when the reagent was freshly prepared. Upon standing over night some of the dinitrophenylhydrazine crystallized out of the 2 per cent reagent, thus indicating its instability. It is the opinion of the author that the percentage yield of hydrazone is dependent upon two factors, *i. e.*, the solubility of the derivative and the equilibrium obtained between the reactants. By increasing the amount of dinitrophenylhydrazine, the reaction can be driven more nearly toward completion, and thus decrease the error.

SUMMARY.

1. It is shown that the official method of preparing dinitrophenylhydrazine reagent and also the assay of camphor in spirit of camphor is unsatisfactory.

2. The results of Plein and Poe have been confirmed and what is considered to be an improvement on their procedure is submitted.

3. In the Plein and Poe method fifteen cc. of ethyl alcohol is added and the sample refluxed for four hours. In the method submitted in this paper the dinitrophenylhydrazine reagent contains twenty-five per cent methyl alcohol which stabilizes the reagent. The time consumed in refluxing is reduced from four to two and one-half hours. The yield of dinitrophenylhydrazone was increased thus reducing the error of the procedure.

THE PREPARATION OF EMODIN FROM CHRYSAROBIN.*

BY JOHN H. GARDNER.[1]

In an earlier paper from this laboratory (1), it was shown that chrysophanic acid can be obtained from chrysarobin by a process consisting in reducing to convert dianthrones into anthrones, boiling under reflux with hydrobromic and acetic acids to demethylate the emodin-anthrone-monomethyl ether, acetylating and crystallizing the chrysophanic acid-anthranol triacetate from acetic acid. From this compound, chrysophanic acid may be prepared by oxidation followed by saponification. Since chrysarobin contains large amounts of reduction products of emodin-

* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.

[1] From the Chemical Laboratory of Washington University, St. Louis.

monomethyl ether (2), the residual material left after the removal of the chrysophanic acid-anthranol triacetate must contain a considerable quantity of emodine anthranol tetra-acetate. This material was oxidized in acetic acid solution with chromic acid and the oxidation product was saponified. To obtain the emodin, this material was extracted with sodium carbonate solution and the extract was acidified. The product so obtained was found to be quite pure. The yields were from 16 to 31 per cent of the weight of chrysarobin used.

EXPERIMENTAL.

Separation of Chrysophanic acid-9-Anthranol Triacetate.—The mixture obtained after reducing, demethylating and acetylating 25 Gm. of chrysarobin as described in the previous paper (1) was dissolved in 400 cc. of glacial acetic acid and the solution was cooled. The chrysophanic acid-9-anthranol triacetate crystallized and was filtered out. The mother liquor was diluted with water until no more precipitate formed. The precipitate was filtered out and air dried.

Preparation of Emodin.—The dried precipitate was dissolved in about 350 cc. of hot glacial acetic acid and treated with a solution of chromic acid in a small volume of 50 per cent acetic acid, using 0.34 Gm. of chromic acid for each Gm. of the precipitate. The mixture was heated to 100° C. for about fifteen minutes and then diluted with water until no more precipitate formed. The precipitate was filtered out and washed with water until the washings were no longer appreciably acid. After air drying, it was suspended in 250 cc. of alcohol and a solution of 12 Gm. of potassium hydroxide in a little water was added. The mixture was boiled under reflux for three hours, cooled and filtered. The filtrate was diluted to about a liter and acidified to Congo Red with hydrochloric acid. The precipitate which formed was filtered out and then stirred well with 800 cc. of 5 per cent sodium carbonate solution. The mixture was filtered and the emodin precipitated from the filtrate by acidifying with hydrochloric acid. Yield, 4.0 to 7.8 Gm., m. p. 254–256° C., with slight previous softening.

SUMMARY.

A satisfactory method for the preparation of emodin from chrysarobin has been developed.

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THE TITRATION CURVE OF METHIONIC ACID.*

PHYLLIS M. BREWSTER[1] AND GLENN L. JENKINS.[1]

Before attempting to prepare stable complex and double salts of methionic acid, it was necessary to study the acid properties of the compound, $CH_2(SO_3H)_2$. If the acid were to behave as a fairly weak dibasic acid, showing two separate dissociations, then it is conceivable that a salt of the type $MM'CH_2(SO_3)_2$ might form easily, depending on its physical properties. Since a solution of such a salt would consist of a mixture of three ions M^+, M'^+ and $CH_2(SO_3)_2^=$ the salt that would crystallize would be determined roughly by the solubilities of the three possible products.

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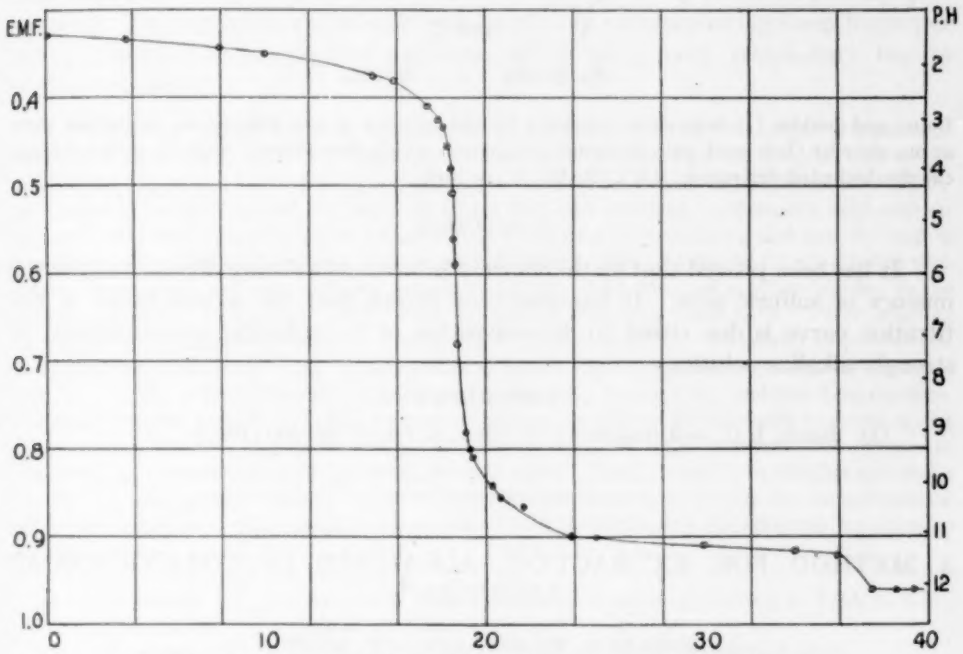
* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.
[1] Contribution from the College of Pharmacy of the University of Minnesota, August, 1937.

The accompanying graph shows the titration of methionic acid with NaOH using the hydrogen electrode. It is seen that there are two breaks in the curve, the second occurring at approximately p_H 11.5, when twice the amount of alkali present at the first break has been added. A similar curve was obtained using the quinhydrone electrode. In other words, the methionic acid here appears to behave as a dibasic acid with a high primary dissociation, and an extremely small secondary dissociation—the dissociation constant being of the order 10^{-11}. In view of the fact that the SO_3H group usually confers strongly acidic properties on a compound, we would expect $CH_2(SO_3H)_2$ to behave in a manner similar to H_2SO_4 on titration, rather than to show such an extremely small secondary dissociation as indicated by the graph.

It was undertaken to prove either: (1) that at the end-point of the first break only one acid group was neutralized, or (2) that at this p_H both acid groups were neutralized and the second break in the titration curve of methionic acid was not significant. To decide between the two

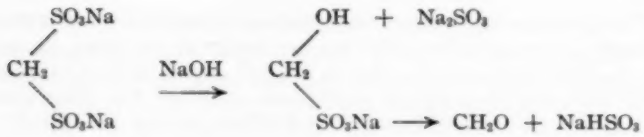


Titration of Methionic Acid with NaOH using the Hydrogen Electrode.

possibilities, the following experiment was carried out: Methionic acid was titrated with NaOH to approximately p_H 7 and a portion of this solution evaporated to dryness. The crystalline material so obtained was dried over P_2O_5 at 100° C. and analyzed.

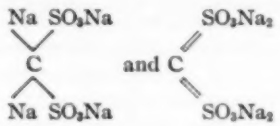
		C.	H.	S.	Na.
Theoretical	$Na_2CH_2(SO_3)_2$	5.450	0.9082	29.11	20.89
	$NaHCH_2(SO_3)_2$	6.054	1.514	32.38	11.60
Obtained		6.43	1.04	28.89	20.85

The results check for the disodium salt. We can say therefore, that in methionic acid both primary and secondary dissociations are very large and cannot be separately detected, and methionic acid behaves toward NaOH as a strong dibasic acid. The second break in the titration curve which invariably occurs at p_H 11 might be explained by the decomposition of some of the methionic acid in strongly alkaline solution. It is possible that a compound with two sulfonic groups attached to the same carbon might be partly hydrolyzed in strongly alkaline solution to give some sulfite,



However the alkaline solution of methionic acid gave no test for sulfite. The difficulty in obtaining the points on the curve at the second break due to the failure of the hydrogen electrode to come to equilibrium rapidly is evidence in favor of some decomposition.

It has also been suggested that substitution or enolization may occur in strongly alkaline solution to give compounds of the types:



Bauer and Jenkins (1) have shown evidence for the presence of two sodiums on the carbon atom at one time by their work with diphenyl methionate, which they showed could be converted into the disubstituted derivative, $RR'C(SO_3\emptyset)_2$ in one step.

CONCLUSION.

It has been proved that methionic acid behaves as a strong dibasic acid, in the manner of sulfuric acid. It has also been shown that the second break in the titration curve is due either to decomposition or to molecular rearrangement in strongly alkaline solution.

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A METHOD FOR EXTRACTING ALKALOIDS IN TOXICOLOGICAL ANALYSIS.*

CHARLES O. WILSON[1] AND L. W. RISING.[2]

One of the first difficulties confronting a toxicologist in his work is the efficient separation of the suspected poison from the viscera containing it. Many methods have been proposed for performing this function, particularly where alkaloids are concerned. None are without fault. Some are too time-consuming, some are very expensive, some lose significant quantities of poison and others fail to eliminate comparatively large amounts of contaminating organic material.

The importance of such weaknesses, particularly in the extraction of pure alkaloids in forensic toxicology is not to be denied, and further, the value of any new procedure designed to eliminate the more conspicuous defects, is obvious. It was in the hope of developing such a strengthened procedure that the investigation described in this paper was instituted.

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A study of the literature reveals that even up to the present time the most widely accepted methods for the extraction of alkaloidal poisons from animal tissue are based fundamentally on the precipitation of protein contaminants with ethyl alcohol. It was not until the beginning of the 20th century that toxicologists began to publish significant reports on other precipitants for this purpose. J. Greenwold (1) (1915) suggested trichloracetic acid. Gauss (2) in 1921 and Hiller and Van Slyke (3) in 1922 also found the acid practical under certain conditions. These papers indicated the feasibility of an extraction procedure which would combine the protein precipitating powers of both ethyl alcohol and trichloracetic acid. The experimental work here described substantiates the reasoning that a combination of ethyl alcohol and trichloracetic acid is an effective protein precipitant. By regulating the concentrations of each and employing them in proper order, a quick and inexpensive procedure which gives very satisfactory results was made possible.

Procedure: Mince a 50 Gm. sample in a meat grinder, add twice its weight of 2 per cent tartaric acid and warm to 70° C. Allow it to stand until the tissue particles settle. Filter the supernatant liquid and wash thoroughly with warm tartaric acid water in small portions. Place the filtrate in ice until thoroughly chilled at which time add sufficient trichloracetic acid solution to yield a final acid concentration of 2.5 per cent. Filter into an evaporating dish and thoroughly wash the residue with a 2.5 per cent solution of trichloracetic acid. Make the filtrate alkaline with sodium bicarbonate and evaporate to dryness at 60° C. Add 50 cc. of absolute alcohol to the residue and acidify with sulfuric acid. Heat for a short time on a steam-bath. Filter, washing the residue with acidulated alcohol and evaporate to dryness at 60° C. Add about 15 cc. of a 1 per cent sulfuric acid solution to the residue and filter into a 150 cc. separatory funnel. Wash carefully. Make three extractions of the acid liquid, using ether in one 10-cc. and two 5-cc. portions. The ether removes interfering substances which seem to be present in increasing amounts as the sample ages. The loss of a slight amount of alkaloid is unavoidable. Sulfuric acid appears to minimize this loss more than hydrochloric or nitric acids. Make the solution alkaline and shake out with the appropriate organic solvent. Table I lists the mean recoveries for the various poisons using this procedure. The organic solvents found best for extracting the alkaloids investigated are as follows:

Morphine Sulfate —Chloroform (9 parts), Alcohol (1 part) (According to A. O. A. C.)
Codeine Phosphate —Chloroform (According to A. O. A. C.)
Narcotine Sulfate —Chloroform (2 parts), Benzene (1 part), Alcohol (1 part)
Pilocarpine Nitrate —Chloroform (According to A. O. A. C.)
Sparteine Sulfate —Chloroform (4 parts), Ether (1 part)
Veratrine Hydrochloride—Ether (4 parts), Alcohol (1 part).

TABLE I.

Alkaloidal Salt.	Amount.	Sheep Stomach.	% of Recovery.
Morphine Sulfate	100.0 Mg.	50.0 Gm.	96.4
Codeine Phosphate	100.0 Mg.	50.0 Gm.	94.1
Narcotine Sulfate	100.0 Mg.	50.9 Gm.	95.0
Pilocarpine Nitrate	100.0 Mg.	50.0 Gm.	94.2
Sparteine Sulfate	100.0 Mg.	50.0 Gm.	95.1
Veratrine Hydrochloride	100.0 Mg.	50.0 Gm.	96.2

The silicotungstic acid method of North and Beal (4) was used for the quantitative determination of codeine, narcotine, pilocarpine and sparteine. In this method the organic solvent containing the alkaloid is volatilized, the alkaloidal residue dissolved in acid water, then precipitated with 5 per cent silicotungstic acid. The precipitate is collected on ashless filter paper and ignited. The amount of alkaloid in the sample can be calculated from the weight of the oxides produced.

The phosphotungstic acid method of A. Heiduschka and L. Wolf (5) gave more uniform results in the determination of morphine and veratrine.

The extraction method was also tested to determine the smallest amount of morphine sulfate which could be extracted from a definite quantity of sheep stomach. The results are expressed in Table II and show that qualitative tests are possible when the ratio of morphine sulfate to tissue is as small as 1:500,000.

TABLE II.

Morph. Sulf.	Sheep Stomach.	Proportion.	Lefort's.	Marquis.	Results.
0.0 mg.	250.0 Gm.	00:00	−	−	−
10.0 mg.	250.0 Gm.	1:25,000	+	+	+
10.0 mg.	250.0 Gm.	1:25,000	+	+	+
10.0 mg.	250.0 Gm.	1:25,000	+	+	+
2.5 mg.	250.0 Gm.	1:100,000	+	+	+
2.5 mg.	250.0 Gm.	1:100,000	+	+	+
2.5 mg.	250.0 Gm.	1:100,000	+	+	+
1.0 mg.	500.0 Gm.	1:500,000	+	+	+
1.0 mg.	500.0 Gm.	1:500,000	+	+	+
1.0 mg.	500.0 Gm.	1:500,000	+	+	+
.5 mg.	500.0 Gm.	1:1,000,000	−	+	−
.5 mg.	500.0 Gm.	1:1,000,000	−	−	−

SUMMARY.

1. A method was developed for extraction of morphine sulfate, codeine phosphate, narcotine sulfate, pilocarpine nitrate, sparteine sulfate and veratrine hydrochloride from animal tissue.

2. The delicacy of the procedure for qualitative extraction in the case of morphine sulfate was examined.

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ON THE REDUCTION OF THE ALKALINITY OF HYPOCHLORITE SOLUTIONS WITH SODIUM BICARBONATE.*

BY ARTHUR OSOL[1] AND JOHN ROGER COX.[1]

In the commercial preparation of solution of sodium hypochlorite an excess of sodium hydroxide or sodium carbonate usually remains in the product. For many purposes such alkalinity is not disadvantageous but for application to wounds dilutions of this solution should be nearly neutral in reaction. To attain to this end the U. S. P. XI directs that in the preparation of diluted solution of sodium hypochlorite from the stronger solution, a sodium bicarbonate solution shall be added until no red color is produced with powdered phenolphthalein.

The mechanism of this neutralization of caustic alkalinity by the addition of sodium bicarbonate has been reported as consisting of the repression of ionization of sodium hydroxide in the solution by the added sodium ion, the law of mass action

* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.

[1] Department of Chemistry, Philadelphia College of Pharmacy and Science, Philadelphia, Pa.

being cited as applying to the equilibrium involved (1), (2). If this were so, it should be possible to obtain the same reduction in alkalinity by adding any sodium salt—sodium chloride, for example. That the explanation offered does not apply is evident from the fact that the alkalinity of sodium hydroxide solution is not reduced upon addition of sodium chloride; furthermore, it is well known that the law of mass action is not applicable to sodium hydroxide solutions or to solutions of other strong bases or strong acids.

What, then, is the explanation of the reduction in alkalinity in this case? One would expect it to involve the well-known reaction

$$OH^- + HCO_3^- \rightleftarrows CO_3^= + H_2O$$

with the equilibrium displaced sufficiently to the right by an excess of bicarbonate so that the degree of hydrolysis of the carbonate is insufficient to produce a red color with phenolphthalein powder under the conditions of the official test. This secondary rôle of bicarbonate ion in repressing the hydrolysis of carbonate ion also explains the reduction of the alkalinity of the latter in solutions where sodium carbonate is used in preparing the hypochlorite solution.

To demonstrate that sodium bicarbonate first reacts with sodium hydroxide, then represses hydrolysis of the resultant sodium carbonate may be shown by a comparison of the p_H values of solutions of sodium hydroxide and of sodium carbonate to each of which is added sodium bicarbonate in varying quantities.

EXPERIMENTAL.

The sodium bicarbonate and sodium carbonate used in preparing the solutions described in Tables I and II were of analytical reagent grade; the sodium hydroxide solution was prepared carbonate-free from a saturated solution of hydroxide. All solutions were prepared in boiled and cooled distilled water not more than 30 minutes before use, the temperature was adjusted to 25° C. and the electromotive force of a glass and saturated KCl-calomel electrode assembly measured by means of a Leeds and Northrup Potentiometer Electrometer. The results, corrected for asymmetry potential of the glass electrode, are set forth in Tables I and II as p_H values of the solutions employed in this study.

TABLE I.—EFFECT OF SODIUM BICARBONATE UPON SODIUM HYDROXIDE SOLUTIONS.

Each Solution, Except No. 14, Prepared 0.0025 Molar With Respect to NaOH.

Solution Number.	Added $NaHCO_3$ Molarity.	Molar Ratio* $HCO_3^-/CO_3^=$.	p_H.
1	0	....	11.50
2	0.00025	....	11.46
3	0.00125	....	11.18
4	0.00250	....	10.61
5	0.00500	1.0	10.03
6	0.00875	2.5	9.70
7	0.01500	5.0	9.38
8	0.02125	7.5	9.19
9	0.02750	10.0	8.97
10**	0.1275	50.0	8.34
11	0.2525	100.0	8.08
12	0.5025	200.0	7.87
13	1.0025	400.0	7.73
14	Saturated—no NaOH		7.65

* Calculation of this ratio based upon the assumption that $NaHCO_3$ first reacts to form Na_2CO_3, hence there is no excess of $NaHCO_3$ until solution 5 is reached.

** This solution is the first to show no pink color when tested with powdered phenolphthalein according to the official directions.

TABLE II.—EFFECT OF SODIUM BICARBONATE UPON SODIUM CARBONATE SOLUTIONS.

Each Solution Prepared 0.0025 Molar With Respect to Na_2CO_3.

Solution Number.	Added $NaHCO_3$ Molarity.	Molar Ratio $HCO_3^-/CO_3^=$.	p_H.
4A	0	....	10.59
5A	0.00250	1.0	10.02
6A	0.00625	2.5	9.69
7A	0.01250	5.0	9.38
8A	0.01875	7.5	9.17
9A	0.02500	10.0	8.97
10A	0.1250	50.0	8.33
11A	0.2500	100.0	8.05
12A	0.5000	200.0	7.89
13A	1.0000	400.0	7.72

DISCUSSION.

From inspection of the above data it may be seen that the first effect of sodium bicarbonate upon sodium hydroxide in solution is to convert the latter to sodium carbonate, this being evident from the similarity of the p_H values of solutions 4 and 4A, the former representing an equimolecular mixture of hydroxide and carbonate which, according to the equation given earlier, should be identical with solution 4A. From this point on the effect of sodium bicarbonate upon both series of solutions is precisely the same as may be seen from a comparison of solutions 5 and 5A, 6 and 6A, etc.

The decrease in p_H resulting from the addition of sodium bicarbonate to solutions 5 to 13 inclusive and 5A to 13A inclusive may be explained on the basis that sodium bicarbonate represses the hydrolysis of sodium carbonate by displacing to the left the point of equilibrium of the following reaction

$$CO_3^= + H_2O \rightleftarrows OH^- + HCO_3^-$$

thereby reducing the hydroxyl ion concentration.[1] When the latter is reduced to correspond to a p_H of 8.3 or less the solution is no longer sufficiently alkaline to color powdered phenolphthalein under the conditions of the official test though all solutions, including even saturated sodium bicarbonate, produced at least a faint pink color with the excess of phenolphthalein test solution directed to be used in the official directions. This is interpreted to mean that with powdered phenolphthalein not enough of the indicator dissolves in the short time interval of the official test, to produce a color with solutions of p_H 8.3 or less, whereas with an excess of phenolphthalein test solution a sufficiently high concentration of indicator is obtained to produce a color at a much lower p_H.

SUMMARY.

From a comparison of the p_H values of solutions containing sodium hydroxide and sodium carbonate with solutions containing sodium carbonate, with and without bicarbonate, it is shown that the neutralization of caustic alkalinity of hypochlorite solutions by sodium bicarbonate involves formation of sodium carbonate

[1] It should be noted here that, to a degree, the hydrolysis of sodium carbonate may be repressed by the salt effect of sodium chloride. This, however, is not characteristic of sodium chloride or sodium salts, being exhibited also by other strong electrolytes.

rather than repression of the ionization of sodium hydroxide as has been reported in the literature.

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A STUDY OF THE TOXIC PRINCIPLES OF RED SQUILL.*,[1]

BY FLOYD J. LEBLANC[2] AND C. O. LEE.[3]

It is estimated that rats do damage to the amount of many millions of dollars annually, and at times carry disease. For these reasons the extermination of rats is a big problem and one to which the government gives much attention.

For the past several years powdered red squill has been widely used as a raticide. Its popularity is due, perhaps, to the fact that it is acceptable to rats and relatively non-toxic to domestic animals. Its success in rat control work has led to much speculation as to the nature and character of its killing principles.

Our study of red squill was begun in 1931, the object being to isolate and identify the toxic constituent or constituents. A very extended number of extractions have been made using a large variety of solvents. The extracts which were obtained were all tested upon rats to determine their potency. The nature of the squill has made the isolation of its constituents a difficult task. While the chemical nature of the rat-killing principle of squill is as yet unsolved we are able to report that a highly toxic, reasonably stable non-crystallizable product has been obtained and will be briefly described under the experimental part of this paper.

Red and White Squill.—There are two varieties of squill, Urginea maritima, designated as red and white squill. White squill is official in the United States Pharmacopœia XI. The red squill is not official.

White squill is generally preferred for medicinal use although red squill has been used in some countries. There is, however, very little information to be had concerning the medicinal differences in these two drugs.

Red squill is native to those countries bordering on the Mediterranean. It is a perennial herb with fibrous roots proceeding from the base of a large, tunicated, pear-shaped bulb. The bulb is from four to six inches long, often weighing as much as four pounds and usually grows about half immersed in the sand.

Claremont (1) found no essential chemical differences between the red and white squills, but observed that the latter had no action on rats. Winton (2) says, "The cardiac glucoside and the rat killing principle in red squills are distinct substances. The former occurs in about equal amounts in red and white squills. The rat poisoning substance, however, is present in significant amounts in red squills only."

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* Presented before the Scientific Section, A. PH. A., Minneapolis meeting, 1938.

[1] This paper has been abstracted from a thesis submitted to the faculty of Purdue University in partial fulfilment of the requirements for the degree of Doctor of Philosophy, June 1938.

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In our work we have observed that red squill will kill rats but that white squill will not. This fact has been repeatedly reported by other workers. It would seem, therefore, that red squill contains some toxic principles which are not present in white squill.

Franklin (3) says, "There appears to be a very considerable difference in the white squill used in medicine and the red squill used for poisoning rats." He also suggests that it is important that they not be confused because of the irritating and paralyzing property of red squill. Winton (2) suggests that, "the properties of the rat poisoning substance have escaped recognition on account of its confusion with the cardiac glucoside."

The Active Constituents.—A variety of names has been applied to the constituents of squill by many investigators. This has led to much confusion. Those names most frequently found in literature are as follows: scillitin, skuline, scillapicrin, scillin, scilladiuretin, scillinine, scillitoxin, scillosterol, scillain, xanthoscillide, scillamarine, scillaren, scillaren-A, scillaren-B and an unnamed compound with the possible formula of $C_{15}H_{20}O_6$. In addition to these, sinistrin, mucilage, sugar, calcium oxalate and a trace of volatile oil have been reported. The presence of a pigment is indicated and we found traces of a fixed oil.

Of the constituents the only one reported as being toxic to rats is the one with the possible formula of $C_{15}H_{20}O_6$.

EXPERIMENTAL.

The red squill used in this investigation was supplied by the K R O Company of Springfield, Ohio. It was a fine powder and in all respects the same as that sold to the trade under the name of K R O.

The several batches of red squill received from this source were all uniformly alike in appearance and toxicity.

The Feeding of Red and White Squill.—A small group of white rats were fed increasing doses of white squill each day for eight days. On the eighth day they received 8000 mg. per kilo. They showed no hesitancy in eating the bait and no symptoms of poisoning of any kind were indicated.

The approximate toxicity of K R O red squill powder was determined by feeding it to both male and female rats. It was found to be fatal to male rats in doses of about 500 mg. per kilo and in doses of about 200 mg. per kilo for the females. Samples of red squill powder from other sources were tested also but none were as toxic as the K R O powder. They likewise varied greatly in potency.

Extraction Studies.—Inasmuch as we were interested in the active constituent of red squill it was necessary to isolate it in some manner. A large number of solvents were tried upon the squill and the extractives carefully tested by feeding. It was found that 80% alcohol was the solvent best suited for extracting the potent principle. This is the solvent which was used in all of our subsequent extractions.

The detailed results of the whole series of solvents which were studied need not be given except to say that acetone and methyl alcohol dissolved a portion of the rat-killing principle. The addition of hydrochloric acid to the menstruum destroyed the toxic substance.

Extraction Procedure.—The procedure for obtaining the potent extract of red squill will now be described.

Twenty-two hundred and fifty grams of the powdered squill are placed in a four-gallon container and macerated with 7000 ml. of 80% alcohol for 24 hours. The mass should be stirred, preferably with a mechanical mixer, at half-hour intervals each two hours in so far as possible. After being allowed to settle, 2500 ml. of the clear superantant liquid are decanted. 3000 ml. more of the menstruum are then added and the maceration and stirring continued for a second 24-hour period. After settling, the clear supernatant liquid is again decanted and the mass transferred to a filter and allowed to drain. The filter is thoroughly washed with 80% alcohol. The combined alcoholic extracts are next concentrated to a thick syrup at a temperature not exceeding 80°.

The syrupy concentrate is next dissolved in 5000 ml. of water and two pounds of animal charcoal added. This mixture is stirred occasionally for two hours and then filtered. The filter is finally washed carefully with 500 ml. of cold water. This is done for the purpose of removing as much of the soluble inert substances as possible without dissolving out the potent principle which has been absorbed by the charcoal.

The moist charcoal is next transferred to a large bottle and 2000 ml. of 80% alcohol are added. The mass is shaken at ten-minute intervals for two hours. The potent principle is removed from the charcoal by the menstruum. The mixture is then filtered, the filter being carefully washed with 1000 ml. of 80% alcohol. The alcoholic filtrates are then evaporated to a syrupy consistency at 80° and spread in thin layers on pill tiles. The tiles are placed in an oven, kept at a temperature of 80°. When the extract has dried, it is carefully scraped from the tiles, powdered, weighed and carefully preserved in a tightly stoppered bottle.

Care should be taken in scraping the dried, irritating, potent extract from the tiles. The wearing of a mask during this part of the procedure is advised.

The extract obtained in this manner generally killed male rats in doses of 10 mg. or less per kilo body weight. The females were killed with about half this dose, hence the extract was approximately fifty times more potent than the squill powder.

Purification of the Extract.—A purified, highly potent product was obtained by dissolving the extract, just described, in 80% alcohol. Upon the addition of an equal amount of anhydrous ether, the mixture became cloudy which upon being shaken deposited a brownish, resinous mass. The alcohol-ether solution was filtered and evaporated to dryness. The resinous precipitate which remained behind was redissolved in 80% alcohol and also carefully evaporated to dryness. These two residues were brownish, resinous masses, the alcohol-ether soluble portion accounting for about forty per cent of the original extract while the insoluble precipitate accounted for the remaining sixty per cent.

Both of these products were fed to rats. The results obtained are given in Table I, following. "Extract A" is that described above as the alcohol-ether soluble extract. "Extract B" is that described as the alcohol-ether insoluble extract.

TABLE I.

No.	Product Fed.	Sex.	Weight Gm.	Dose Mg. per Kilo.	Dose Mg. per Rat.	Results.
1	Extract A	M	470	5	2.350	Dead
2	Extract A	M	498	5	2.450	Dead
3	Extract A	M	404	5	2.020	Dead
4	Extract A	M	386	5	1.930	Dead
5	Extract A	M	218	5	1.090	Dead
6	Extract A	M	224	5	1.120	Dead
7	Extract A	M	344	5	1.720	Sick. Recovered
8	Extract A	M	428	3	1.284	Sick. Recovered
9	Extract A	M	370	3	1.110	Sick. Recovered
10	Extract A	F	336	5	1.680	Dead
11	Extract A	F	318	3	0.954	Dead
12	Extract A	F	284	3	0.852	Dead
13	Extract A	F	270	3	0.810	Dead
14	Extract A	F	238	3	0.714	Dead
15	Extract A	F	217	3	0.636	Sick. Recovered
16	Extract A	F	218	3	0.654	Dead
17	Extract A	F	234	3	0.702	Dead
18	Extract A	F	230	3	0.690	Dead
19	Extract A	F	248	2	0.596	Dead
20	Extract A	F	228	2	0.456	Sick. Recovered
21	Extract B	F	208	10	2.080	No symptoms
22	Extract B	F	270	50	13.500	No symptoms
23	Extract B	F	210	50	10.500	No symptoms
24	Extract B	F	200	50	10.000	No symptoms
25	Extract B	F	314	50	15.700	No symptoms

It will be seen from the results indicated in Table I, that the alcohol-ether soluble extract is a very potent extract being approximately one hundred times as toxic as the original red squill powder, 2 mg. to 3 mg. per kilo body weight being fatal to female rats and about twice that amount being fatal to males.

The potent extract, just described, was non-crystalline. The usual qualitative tests for carbon, hydrogen, oxygen, phosphorus, sulfur, nitrogen and the halogens were made and carbon, hydrogen and oxygen were found to be present. Further purification procedures are contemplated with a view to obtaining the toxic principle in a more highly refined state.

SUMMARY.

1. Temperatures up to 100° are not injurious to the toxic principles of red squill.

2. The rat-killing principle of red squill is extracted from red squill by a menstruum comprised of 80% alcohol.

3. Both animal charcoal and activated charcoal adsorb the rat-killing principle from an aqueous solution. It may be recovered from the charcoal by treating the latter with 80% alcohol.

4. A highly potent product has been obtained which possesses a toxicity one hundred times that of red squill powder from which it is obtained.

5. It has been shown that female rats are killed with about half the dose of red squill powder and squill extracts that is required to kill male rats.

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TIME VARIANTS IN THE ASSAY OF OIL OF PEPPERMINT.*

BY LAWRENCE H. BALDINGER.[1]

INTRODUCTION.

Several times during the commercial analysis of samples of peppermint oil, the acetylation mixture was permitted accidentally to reflux for more than one hour, the time specified by the United States Pharmacopœia. The possible effect of the prolonged heating on the menthol content of the oil prompted the investigation of the effects of longer or shorter reflux periods in the acetylation of the oil with acetic anhydride and anhydrous sodium acetate. Obviously, the effect of longer and shorter periods of heating in the saponification or alkaline hydrolysis of the acetylated oil with alcoholic potassium hydroxide solution could be studied at the same time.

In a previous paper (1) the effect of varying the amount of alcoholic potassium hydroxide solution and the degree of hydrolysis at various temperatures has been studied. The velocity constants for the saponification of menthyl acetate and acetylated peppermint oil at different temperatures have been reported (1), (2).

EXPERIMENTAL PROCEDURE.

A bulked sample of raw peppermint oil collected during the 1937 season was used in this work. Adequate portions of the oil (about 75 cc.) were refluxed with acetic anhydride and anhydrous sodium acetate over a sand-bath for periods varying from fifteen minutes to three hours. The time was noted from the beginning of boiling until the flask was removed from the sand-bath.

TABLE I.—TOTAL PER CENT MENTHOL IN ACETYLATED OIL.

Sample No.	Saponification Time (Minutes).	Time of Acetylation. 15 Min.	30 Min.	45 Min.	60 Min.	90 Min.	120 Min.	180 Min.
		Per Cent Menthol.						
1	15	47.01	46.73	46.41	46.85	47.56	46.16	46.72
2	15	47.86	47.08	45.74	46.73	47.23	46.21	48.96
3	30	47.91	47.56	46.67	47.46	47.81	46.63	48.05
4	30	47.03	47.32	47.14	47.37	48.20	46.95	47.76
5	45	48.71	47.57	48.00	48.13	48.57	48.78	50.05
6	45	48.87	47.76	47.71	48.12	48.52	49.00	50.04
7	60	49.03	48.45	48.58	48.51	48.77	49.48	49.14
8	60	50.03	48.40	48.62	48.54	48.49	49.27	49.69
9	90	49.64	48.97	49.90	48.82	49.49	50.28	49.34
10	90	49.53	47.69	49.61	49.99	49.63	49.88	49.56
11	120	49.65	49.07	49.27	49.91	49.80	49.81	50.00
12	120	50.53	48.14	49.37	50.33	50.09	49.94	50.12
Average		48.82	47.89	48.08	48.40	48.68	48.53	49.12
Deviation from arithmetic mean of 84 samples, 48.50%		+0.32	−0.62	−0.42	−0.10	+0.18	+0.03	+0.62
Standard Deviation for 7 averages from arithmetic mean 48.50%		0.39%						

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After washing with water and diluted sodium carbonate T.S., and drying over calcium chloride, duplicate 5-cc. portions, accurately weighed, of the acetylated oil, were treated with 50-cc. portions of half-normal alcoholic potassium hydroxide and refluxed for varying lengths of time, from fifteen minutes to two hours, the period of refluxing being noted in the same manner as in the acetylation process. After cooling, the samples were titrated with half-normal sulfuric acid, using phenolphthalein as indicator. From this data and the per cent of ester, previously determined, the per cent of menthol in each sample was calculated. From these figures the arithmetic mean and the mean deviation for the entire lot of samples as well as for each group of samples were calculated. See Table I. Table II shows the deviation from the arithmetic mean for each sample, the number

TABLE II.—DEVIATION OF PERCENTAGES FROM THE AVERAGE MENTHOL CONTENT, 48.50%.

Sample No.	Saponification Time (Minutes).	Time of Acetylation. 15 Min.	30 Min.	45 Min.	60 Min.	90 Min.	120 Min.	180 Min.	Mean Deviation Based upon Saponification Time.
1	15	−1.49	−1.77	−2.09	−1.65	−0.94	−2.34	−1.78	1.72
2	15	−0.64	−1.42	−2.76	−1.77	−1.27	−2.29	+0.46	1.51
3	30	−0.58	−0.94	−1.83	−1.04	−0.69	−1.87	−0.45	1.06
4	30	−1.47	−1.18	−1.36	−1.13	−0.30	−1.55	−0.74	1.10
5	45	+0.21	−0.93	−0.50	−0.37	+0.07	+0.28	+1.55	0.56
6	45	+0.37	−0.74	−0.79	−0.38	+0.02	+0.50	+1.54	0.62
7	60	+0.53	−0.05	+0.08	+0.01	+0.27	+0.98	+0.64	0.36
8	60	+1.53	−0.10	+0.12	+0.04	−0.01	+0.77	+1.19	0.54
9	90	+1.14	+0.47	+1.40	+0.32	+0.99	+1.78	+0.84	0.99
10	90	+1.03	−0.81	+1.11	+1.49	+1.13	+1.38	+1.06	1.14
11	120	+1.15	+0.57	+0.77	+1.41	+1.30	+1.31	+1.50	1.14
12	120	+2.03	−0.36	+0.87	+1.83	+1.59	+1.44	+1.62	1.39
Mean Deviation		1.01	0.78	1.14	0.95	0.72	1.37	1.11	..
Number of samples with Deviation less than 1%		5	9	6	5	8	4	5	..
Mean Deviation for 84 samples		1.01							

of samples with deviations less than 1%, the mean deviation for each group of samples, based both upon saponification time and acetylation time, and the mean deviation for the 84 samples. The arithmetic mean for the 84 samples is 48.50%.

DISCUSSION.

In the determination of menthol in commercial samples of mint oil it is sometimes difficult to get concordant results from two or more laboratories. A communication from an official of one of the large essential oil companies mentions briefly one of the reasons for these differences. "We carry the back titration to the absence of red color. At times two different operators may think this takes place at slightly different points which would cause some difference in their results. We have found it hard to obtain consistent checks when the same samples are tested in different laboratories and for that reason we usually allow up to 1% for experimental error on menthol determinations."

This would help to explain the deviations from the average per cent of menthol obtained in this work. Inasmuch as all of the titrations in this investigation were performed by one dividiaul who, within the limits of visual error, titrated all

samples to the same end-point, other factors must help to explain the deviations in menthol percentages.

From the data listed in Table II, it would seem that the time of acetylation may vary within broad limits, while the time of saponification had best be varied between 45 minutes and 60 minutes to give results which do not deviate abnormally from the mean. It has been observed in earlier work (1) that at 50° C., acetylated peppermint oil is 80% hydrolyzed in 50 minutes and 84% hydrolyzed in 60 minutes. At steam-bath temperatures it is reasonable to assume that the reaction would go almost to completion in the same length of time. It will be observed that in those cases where the oil was saponified for periods shorter than 45 minutes the deviation was usually negative, indicating incomplete saponification, and that in the case of those samples heated for more than 60 minutes the deviation was positive, indicating, it is believed, that side reactions involving potassium hydroxide take place, thereby showing in the final calculation an erroneous per cent of menthol. While experimental evidence is not yet available to prove the contention, it is believed that resinification or polymerization of certain constituents, evidenced by a darkening of the reaction mixture, is induced by prolonged heating with potassium hydroxide, and that in the reaction some base is used up, thereby leading to erroneous results.

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A COMPARATIVE STUDY OF THE ANTISEPTIC PROPERTIES OF OFFICIAL PREPARATIONS. A MODIFICATION OF THE REDDISH CUP METHOD FOR VOLATILE SUBSTANCES.*

BY LEONARD J. PICCOLI[1] AND MORRIS HECHT.[1]

The purpose of this investigation is to study the inhibitory properties of several official preparations using Reddish's original method (1).

EXPERIMENTAL.

Staphylococcus aureus was grown at 37° C. in broth containing 1% Armour's Peptone, 0.5% Leibig's Beef Extract and 0.5% sodium chloride, the p_H being adjusted to 6.8. 0.1 ml. of a 24 hour old culture was thoroughly mixed with 15 to 20 ml. of nutrient agar (composed of 1% Armour's Peptone, 0.5% Leibig's Beef Extract, 0.5% sodium chloride and 1.5% bacto-agar, the p_H adjusted to 7.2–7.4) at 45° C., the mixture poured into a sterile petri dish, and allowed to harden. A disk was cut out in the agar by means of a sterile cork borer, 1.5 cm. in diameter. The disk was removed with sterile forceps and any cracks or crevices sealed with one or two drops of melted agar. After the agar cup was prepared six drops of the liquid antiseptic to be tested were placed in the cup and the plate incubated under an unglazed porcelain top for 24 to 48 hours at 37° C. Ointments, pastes and salves were melted. Enough of the melt was used to obtain a complete peripheral contact.

If the preparation is antiseptic or inhibitory a circular zone of clear agar surrounds the cup; the unaffected organisms continue to grow outside this zone. The distance from the edge of the cup to the edge of the zone is read in mm. This distance is a measure of the inhibitory (or penetra-

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tion) value of the antiseptic. A reading of zero indicates no penetration or no antiseptic value; 35 mm. or more signifies that the entire plate is clear of any organisms. This is the optimal penetration value. If the antiseptic to be tested is recommended for cuts or open wounds 1 mm. of 10% beef blood serum is added to the agar.

The following groups of compounds were tested (1) acids and bases, (2) inorganic compounds, (3) organic compounds, (4) mercury, silver and iodine compounds, (5) essential oils, (6) miscellaneous.

TABLE I.

Acids and Bases.	Penetration or Clear Area in Mm.
Acetic acid, 5%	20
Acetic acid, glacial, U. S. P. XI	35
Aqua regia, N. F. VI	35
Aqua regia, dilute, N. F. VI	25
Ammonium hydroxide, 25%	35
Ammonium hydroxide, 10%	25
Boric acid, 1%	0
Boric acid, $^1/_2$ sat.	3
Boric acid, sat. 5%	6
Hydrochloric acid, conc.	35
Hydrochloric acid, 10%	24
Hydrochloric acid, 2%	11
Lactic acid, 85%	28
Lactic acid, 10%	14
Nitric acid, conc.	35
Nitric acid, 10%	21
Phosphoric acid, 85%	35
Potassium hydroxide, 10%	11
Sodium hydroxide, 10%	11
Sulfuric acid, 10%	29
Inorganic Preparations.	
Solution of aluminum chloride, N. F. VI	14
Solution of aluminum acetate, N. F. VI	3
Solution of aluminum subacetate, N. F. VI	11
Calamine ointment, N. F. VI	0
Solution of ferric chloride, U. S. P. XI	12
Solution of ferric subsulfate, N. F. VI	17
Hydrogen peroxide, 1%	7
Hydrogen peroxide, U. S. P. XI	11
Potassium chlorate, 6%	0
Potassium dichromate, 1%	12
Potassium dichromate, 5%	15
Potassium nitrate, 12%	1
Potassium permanganate, 1:2000	5
Sodium carbonate, 10%	0
Sodium chloride, 10%	0
Sodium chloride, 25%	0
Sodium perborate, 2%	5
Zinc sulfate, 1%	3
Organic Preparations.	
Phenol, 5%	5
Formaldehyde, 5%	35
Ethyl alcohol, 70%	35
Basic fuchsin, 3% in 10% alcohol	5
Safranine, 3% in 10% alcohol	12
Acriflavine, 3% in 10% alcohol	8

Thymol, 1% in 50% alcohol	35
Picric acid, 5% in 95% alcohol	5
Picric acid, 5% in 50% alcohol	6
Salicylic acid, sat. aq. sol.	0
Tannic acid, 5%	3
Trichloracetic acid, 5%	8
Trichloracetic acid, 10%	12
Essential Oils, Fixed Oils and Oleoresins.	
Oil of Anise	5
Oil of Bitter Almonds	35
Oil of Caraway	10
Cod Liver Oil	6
Castor Oil	0
Oil of Chaulmoogra	0
Oil of Cinnamon	15
Oil of Coriander	7
Croton Oil	1
Oil of Clove	6
Eucalyptol	15
Oil of Eucalyptus	7
Oil of Fennel	7
Oil of Juniper	7
Oil of Lavender	7
Oil of Lemon	7
Oil of Myristica	6
Rectified Oil of Tar	6
Oil of Peppermint	6
Oil of Pimenta	10
Olive Oil	0
Oil of Rosemary	10
Oil of Sassafras	2
Oil of Santal	6
Oil of Spearmint	11
Oil of Turpentine	11
Oil of Thyme	0
Oil of Wintergreen	0
Oleoresin of Capsicum	0
Oleoresin of Cubeb	1
Oleoresin of Ginger	0
Oleoresin of Malefern	7
Essential Oil of Mustard	35
Miscellaneous Preparations.	
Tincture of Iodine, U. S. P. XI	35
Mild Tincture of Iodine, U. S. P. XI	23
Stronger Tincture of Iodine, N. F. VI	35
Iodoform	5
Silver nitrate, 1%	8
Mild protein silver, 10%	7
Strong protein silver, 5%	5
Harrington's solution	35
Mercuric chloride, 1–5000	9
Black wash, N. F. VI	7
Yellow wash, N. F. VI	7
Ammoniated mercury ointment, U. S. P. XI	8
Mild mercurial ointment, U. S. P. XI	5

Compound Ointment of Benzoic Acid, N. F. VI	6
Ointment of Ichthammol, N. F. VI	1
Antiseptic solution, N. F. VI	4
Aromatic sodium perborate, N. F. VI	15
Boric acid, powder	7
Compound Tincture of Green Soap, N. F. VI	7
Compound Powder of Zinc Sulfate	12
Dakin's Solutions, U. S. P. XI	5
Dental Liniment, N. F. VI	11
Dobell's solution, N. F. VI	3
Solution of methyl-rosaniline	9

EFFECT OF A SPORE PRODUCING ORGANISM ON THE PENETRATION VALUE.

A further study was made to test the penetration value of a group of compounds using *Bacillus subtilis*, a spore producing organism. The procedure and media used with *B. subtilis* were identical to those described for *S. aureus*. In general, if a preparation showed any penetration with *S. aureus* as the test organism, the penetration increased when *B. subtilis* was substituted.

TABLE II.

Compound.	Penetration in Mm. *S. Aureus.*	*B. Subtilis.*
Antiseptic soln., N. F. IV	4	12
Alkaline aromatic soln., N. F. IV	0	5
Alkaline aromatic soln., N. F. VI	0	3
Calamine ointment, N. F. VI	2	20
Comp. Tinct. of Green Soap, N. F. VI	7	10
Burow's soln., N. F. VI	6	13
Solution of ferric chloride, U. S. P. XI	12	16
Solution of ferric subsulfate, N. F. VI	17	20
Tannic acid, 5%	3	4
Yellow wash, N. F. VI	7	14
Black wash, N. F. VI	7	12
Hydrochloric acid, 2%	11	15
Comp. Coal Tar Ointment, N. F. VI	0	0
Comp. ointment of Benzoic Acid, N. F. VI	6	10

EFFECT OF SEROUS MATERIAL ON THE PENETRATION VALUE OF ANTISEPTICS.

Preparations recommended for use on open wounds or cuts will be effective only if they exhibit activity in the presence of serous fluids. The penetration value of an antiseptic may increase or decrease in the presence of blood serum. A group of skin antiseptics was tested with and without beef blood serum using *S. aureus* as the test organism. Noteworthy is 7% Tincture of Iodine, which shows no decrease in penetration value in the presence of blood serum.

TABLE III.

Compound.	No Serum Added.	Serum Added.	Observation.
Tinct. of Iodine, U. S. P. XI	35	35	No change
Tinct. of Iodine, mild, U. S. P. XI	21	23	Increase
Picric acid, 5% in 50% alcohol	6	6	No change
Harrington solution	35	30	Decrease
Burow's soln., N. F. VI	6	4	Decrease
Thymol, 1% in 50% alcohol	35	11	Decrease
Solution of ferric chloride, U. S. P. XI	12	7	Decrease

EFFECT OF VOLATILE CONSTITUENTS OF ANTISEPTICS ON THEIR PENETRATION VALUES.

Many antiseptics have constituents that are highly volatile. Ammonia, formaldehyde alcohol, iodine and the essential oils are a few that may be mentioned. These substances may

volatilize easily when placed in the incubator for a period of 24 hours. The volatile gas may pass through the unglazed porcelain top of the petri dish or may be absorbed into the surface of the agar. Thus the penetration value of the antiseptic will be interpreted erroneously. To determine whether a volatile antiseptic acts (1) as a vapor (by surface adsorption on the agar), or (2) by penetration only through the agar or (3) a combination of both, three agar plates were prepared as usual. A cup (1.2 cm. in diameter) was cut from the first plate, the agar removed, and into this hole was placed a thin glass thimble (1.1 cm. in diameter and 0.5 cm. high). Six drops of antiseptic were placed in the glass thimble and the covered petri dish incubated. A cup (1.2 cm. in diameter) was cut from the second plate. Six drops of antiseptic were placed in the cup and the cup sealed with a glass cover slip (2.3 cm. square). This petri dish was covered and incubated. The third plate was prepared in the usual manner, six drops of antiseptic were used and the plate incubated.

TABLE IV.

a—Antiseptic placed in cup.
b—Antiseptic placed in glass thimble.
c—Antiseptic placed in cup and covered with glass slide.

Compound.	Method.	Penetration in Mm.
Formaldehyde 5%	a	35
Formaldehyde 5%	b	35
Formaldehyde 5%	c	35
7% Tincture of Iodine	a	35
7% Tincture of Iodine	b	35
7% Tincture of Iodine	c	20
70% Ethyl alcohol	a	35
70% Ethyl alcohol	b	35
70% Ethyl alcohol	c	35
Essential Oil of Mustard	a	35
Essential Oil of Mustard	b	35
Essential Oil of Mustard	c	35
Oil of Bitter Almonds	a	35
Oil of Bitter Almonds	b	35
Oil of Bitter Almonds	c	0

From this table it will be noted that (*a*) formaldehyde, 70% alcohol, and Essential Oil of Mustard act as vapors; as penetrants; or by a combination of both, with equal efficiency; (*b*) Tincture of Iodine acts best as a vapor and least by penetration (*c*) Oil of Bitter Almonds acts only as a vapor (by surface adsorption) and exhibits no penetration.

SUMMARY.

1. The inorganic acids and bases, in general, exhibit high penetration. The organic acids; picric, salicylic, benzoic, tannic and trichloracetic show slight penetration values when compared with the common inorganic acids and bases.

2. The heavy metal salts of aluminum and iron show medium penetration values. The sodium and potassium salts show very small penetration values. Potassium dichromate is an exception.

3. The organic preparations have variable penetration values. Five per cent phenol shows a penetration value of 5 mm. Of the dyes studied, acriflavine, methylrosaniline (gentian violet) and safranine show small penetration values. The ointments in general, show very slight penetration values. Two exceptions are Ointment of Ichythol and Compound Ointment of Benzoic Acid. Seventy per cent ethyl alcohol, formaldehyde and 1% thymol show excellent results.

4. The best results are exhibited with iodine tinctures. Mild Tincture of Iodine gave very good results. Aqueous iodine solutions, in concentration up to

7% show no inhibitory properties. A notable exception which gives values equal to 7% Tincture of Iodine is an aqueous solution of 7% I_2, 14% KI, 5% benzene. The iodine ointments show little or no values. Silver compounds, with or without protein, give results equal to phenol. The mercury compounds give good results.

5. The essential oils exhibit a wide variation of values. Oil of Bitter Almonds, Essential Oil of Mustard show the highest penetration values; oils of cinnamon, turpentine and thyme, and eucalyptol, show medium penetration values; oils of clove, eucalyptus, lavender, lemon, caraway, pimenta, rosemary, indicate values somewhat greater than 5% phenol.

6. In studying the effect of the spore producing organism, *B. subtilis*, on the penetration value, a group of 60 antiseptics of which 14 are listed, were selected at random. It was found, in general, that if the antiseptic showed any penetration value when *S. aureus* was used, the penetration value increased when *B. subtilis* was substituted. However, no direct relationship could be established.

7. The effect of serous material on the penetration value of an antiseptic has been investigated. Mild Tincture of Iodine shows a small increase in value. Seven per cent Tincture of Iodine, and picric acid (5% in 50% alcohol) show no change, and all others studied show a decrease in value.

8. A modified procedure for the determination of the penetration values of volatile antiseptics is introduced. This procedure shows that the volatile antiseptics, formaldehyde, 70% alcohol and Essential Oil of Mustard may act as vapors, or by penetration through the agar with equal efficiency; that 7% Tincture of Iodine acts more efficiently as a vapor than by penetration; and that Oil of Bitter Almonds acts only as a vapor and shows no penetrative action.

CONCLUSION.

1. A study of the penetrative value of many official antiseptics was made using Reddish's cup plate method.

2. The effect of the penetration value of a group of antiseptics using a spore producing organism was studied.

3. The effect of serous material on the penetration values of some skin antiseptics was noted.

4. A study was made on the mode of action of volatile antiseptics.

Acknowledgment is made to the Works Progress Administration for the City of New York for assistance rendered under Proj. 465-97-3-120.

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THE REHABILITATION COMMITTEE OF THE AMERICAN LEGION.

National Commander Chadwick has appointed Secretary Kelly of the A. PH. A. as a member of the Advisory Board to the Rehabilitation Committee. The Board membership consists of representatives from the groups directly interested in public health. The Rehabilitation Committee has charge of the first and most important of the eight major programs which the American Legion carries on for its members. The Committee arranged for a National Rehabilitation Conference in Washington on January 26th and 27th, which was attended by representatives from every state in the Union and the National officers, and plans were made to continue and to extend the services which the Legion offers to disabled veterans.

IT CAN BE DONE, SERIES NO. 18.*

BY J. LEON LASCOFF.[1]

Since the first series on "It Can Be Done" which I presented at the Baltimore meeting of the A. PH. A. in 1930, I have been requested to continue the work and have presented exhibits and demonstrations at the annual meetings of the A. PH. A., at various branches of the ASSOCIATION, and before State and other organizations. At our last annual meeting I presented Series 12 and during the past year I have given Series 13 at the Centennial Celebration of the Medical College of Virginia, Series 14 at the Connecticut College of Pharmacy, Series 15 before the Summit County Retail Druggists Association in Akron, Ohio, Series 16 at the Rutgers University College of Pharmacy and Series 17 at the First Annual Spring Clinic of the University of Buffalo College of Pharmacy.

The average pharmacist too often loses sight of the fact that his education and training are designed to fit him for more than just throwing together a group of medicinal ingredients "just as the doctor wrote them." Too often he forgets that his training is designed to enable him to detect incompatibilities of various kinds which arise in everyday prescription work and to figure out ways and means of overcoming them. Too often he relies on the "Shake Well" label and consoles himself with the thought that "shaking well" will take care of any separation or precipitation which may take place in dispensing. He does not realize the danger of this practice and is liable to forget that it is the pharmacist and not the physician who is held responsible for injury resulting from medication.

Should some change or addition be necessary in order to overcome an incompatibility in a prescription, the physician should be notified and the matter discussed with him. He will appreciate this, as very often he is entirely unaware of the incompatibility. Not only is it important for the sake of uniformity of dosage that incompatibilities be overcome, but it is also important from the standpoint of uniformity and nicety of appearance. The physician should be consulted on every incompatibility, particularly when a change in the prescription is required, so that the next time he writes the prescription he will keep the incompatibility in mind and avoid the difficulty.

Many physicians, when asked why they do not prescribe official preparations in preference to proprietaries, respond that when they prescribe proprietaries they are certain of getting the same preparation no matter where it is dispensed—a preparation that is uniform in color, taste and appearance. On the other hand, they say, when official preparations are prescribed they will differ in taste, color and appearance in each locality in which they are dispensed. Prescriptions containing U. S. P. and N. F. galenicals with other preparations should be made up with the greatest of care and the best of material, and there is no reason why any official preparation should look or taste differently when prepared in different pharmacies.

Many of the samples I am about to present were problems which arose in our pharmacy. Many came from pharmacists all over the country who called by telephone or wrote, giving the prescriptions and saying "It can't be done." My

* Presented before the Section on Practical Pharmacy and Dispensing, A. PH. A., Minneapolis meeting, 1938.

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answer is "It Can Be Done" and I am happy to say that to date I have been successful in my experiments.

℞ 1	Iodine	gr. III
	Camphor	gr. VIII
	Chlorbutanol anhydrous	gr. XXX
	Oil of Rose Geranium	min. XX
	Oil of Thyme	min. X
	Liquid Petrolatum *ad*	oz. III

Dissolve the iodine and camphor in the oil of thyme and oil of rose geranium by trituration. Dissolve the chlorbutanol anhydrous in the liquid petrolatum by heating on a water-bath. Mix both solutions together.

℞ 2	Menthol	1%
	Phenol	1%
	Oil of Lavender	gtts. XXX
	Oleic Acid	oz. *ss*
	Salol	oz. I
	Olive Oil, *q. s. ad*	oz. XVI
	Lime Water	oz. XXXII

Dissolve the menthol, phenol (crystals), salol and oil of lavender in a small amount of olive oil. Mix the oleic acid with the remainder of the olive oil and shake well with the lime water. Then mix the two liquids together. Be sure they are mixed well.

℞ 3	Sodium Bromide	dr. III
	Ammonium Bromide	dr. III
	Elixir I. Q. S. Phosph. *ad*	oz. III

If Elixir I. Q. S. is used instead of Elixir I. Q. S. Phosphate, a clear solution will result.

℞ 4	Strychnine Sulfate	gr. *ss*
	Dil. Nitrohydroch. Acid	dr. II
	Tr. Cardamom Comp.	dr. VI
	Aqua Menth. Pip. *ad*	oz. III

Dissolve the strychnine sulfate in 2 oz. of the peppermint water. Filter the Tr. Cardamom Comp. twice to be sure there is no precipitate or cloudiness. Add the tincture to the first solution and lastly add the nitrohydrochloric acid drop by drop. The finished product will be clear without filtration.

℞ 5	Potassium Iodide	4.0
	Tr. Stramonium	10.0
	Spts. Chloroform	10.0
	Aqua Destill. *ad*	120.0

Mix the Tr. Stramonium with the Spts. of Chloroform. Add the water. Dissolve the potass. iodide separately in a small quantity of water, and lastly add this solution to the other mixture.

℞ 6A	Potassium Citrate	oz. II
	Tr. Hyoscyami	oz. II
	Aqua Destill. *ad*	oz. VI

Completely dissolve the potassium citrate in the full amount of water and then add the Tr. Hyoscyamus, little by little. No separation will take place.

℞ 6B	Potassium Citrate	oz. I
	Tr. Hyoscyamus	oz. *ss*
	Elixir Phenobarbital *ad*	oz. IV

Dissolve the pot. citrate completely in the Elix. Phenobarb. (Elix. Phenobarb. contains enough water to dissolve the pot. citrate). Then add the Tr. Hyoscyamus, little by little.

℞ 7	Aromatic Spirit of Ammonia	oz. I
	Oleic Acid	oz. II
	Oil Hydrocarbon	oz. IV
	Iodine Resublimed	dr. V *ss*

Dissolve the iodine in the aromatic spirits of ammonia. Mix the oleic acid with the oil hydrocarbon. Then mix all together.

℞ 8	Phenobarbital Sodium	gr. VII
	Essence of Caroid	oz. I *ss*
	Belladenal Tablets	No. II
	Aqua Destill., *q. s. ad*	oz. IV

Dissolve the belladenal tablets in water by addition of a few grs. of bicarbonate of soda. Dissolve the phenobarbital sod. in water. Mix the two solutions and add the essence of caroid. Lastly add 10 cc. of pure glycerin and enough water to make 4 oz.

℞ 9	Sulfur Ppt.	0.6
	Resorcin	1.2
	Salicylic Acid	3.0
	Ol. Ricini	2.4
	Spir. Dilut. *ad*	120.0

Mix the sulfur ppt. and salicylic acid with about 10 grs. of tragacanth and rub up to a paste with water. Separately dissolve the resorcin and castor oil in the alcohol. Add the balance of the water and gradually add this to the suspension of sulfur ppt. and salicylic acid.

℞ 10	Acid Tannic	5.0
	Resorcin	2.4
	Glycerin	6.0
	Aqua Calcis *ad*	120.0

Triturate the tannic acid and resorcin with the glycerin until smoothly mixed. Add the lime water little by little with constant trituration.

℞ 11	Iodeikon	gr. 62
	Menthol	gr. 36
	Salicylic Acid	gr. 36
	M. ft. Capsules No. 36	

Rub up the menthol with 36 grs. mag. oxide heavy. Separately rub up the salicylic acid with 36 grs. mag. oxide heavy. Separately rub up the iodeikon with 36 grs. mag. oxide heavy. Finally mix the three triturations and place in capsules.

℞ 12	Potassium Iodide	gr. V
	Diuretin	gr. V
	Aminophyllin	gr. I
	Phenobarbital	gr. $^1/_2$
	M. ft. Caps. No. I	

All the ingredients are used in tablet form. Triturate the tablets, mix and fill the capsule.

℞ 13	Phenobarbital	0.9
	Elix. Three Bromides *ad*	120.0

Method 1: Add 1 dr. of acacia.

Method 2: Dissolve the phenobarbital in about $^1/_2$ oz. alcohol and add the required amount of bromide salt.

℞ 14	Methenamine	dr. IV
	Sod. Acid Phosphate	dr. V, gr. XX
	Tr. Belladonna	dr. V, min. XX

Tr. Hyoscyamus	oz. I, dr. II, min. XL
Aqua. Destill. *ad*	oz. IV

Dissolve the methenamine and sodium acid phosphate in the water. Mix this solution with 2 dr. of acacia previously mixed with water. Mix the tinctures together and gradually add them to the first mixture.

℞ 15	Lanolin	oz. I
	Aqua. Destill. *ad*	oz. VI

Mix 5.0 Gm. of sod. stearate with the water to be used. Melt the lanolin and add the mixture of sod. stearate and water to it slowly and with constant stirring.

℞ 16	Guaiacol	0.25
	Creosote	1.50
	Iodoform	3.00
	Ether	8.00
	Olive Oil *ad*	30.00

Warm the olive oil. Triturate the iodoform with the olive oil and add the guaiacol and creosote. Lastly add the ether and a clear solution will result.

℞ 17	Strychnine Sulfate	gr. 1/4
	Quinine Bisulfate	gr. XX
	Ferric Phosphate	gr. XX
	Glycerin	dr. II
	Potassium Citrate	gr. XX
	Elix. Lactated Pepsin, *q. s.*	oz. IV

Method 1: Use ferrous sulfate instead of ferric phosphate. Add a few drops of dilute sulfuric acid to the finished product.

Method 2: Dissolve the ferric phosphate in about 1 dr. hot water. Separately dissolve the pot. citrate in a small amount of the Elix. Lact. Pep. and add the glycerin. Dissolve the quinine bisulfate in another quantity of Elix. Lact. Pep. and mix the solutions.

℞ 18	Thyroid	gr. 1/4
	Pituitary	gr. 1/4
	Ext. Cascara Sagrada	gr. 1
	Aspirin	gr. III
	Caffeine Citrate	gr. I
	Sod. Bicarbonate	gr. I
	M. ft. Caps. No. I	

Use caffeine alkaloid instead of caffeine citrate. Add magnesium oxide heavy.

℞ 19	Ammoniated Mercury	
	Bismuth Subnitrate	
	Glycerin	
	Ol. Sesami, *aa, q. s. ad*	60.0

Triturate ammoniated mercury and bismuth subnitrate with 2.0 Gm. of sod. stearate. Add the Ol. sesami and glycerin to make an ointment.

℞ 20	Sodium Bromide	12.5
	Chloral Hydrate	2.0
	Spts. Anisi	0.3
	Chloroform Water *ad*	120.0

Rub together the sod. bromide and the chloral hydrate with the Spts. Anisi. Gradually add the chloroform water to make 120.0.

℞ 21	Holocain	½%
	Sol. Merthiolate (1:1500) *ad*	oz. I

Dissolve the holocain in 10 cc. of distilled water. When the solution is added to the merthiolate solution, a heavy precipitate is formed. This is not fit for use in the eye. Therefore, add a few drops of boric acid sol. to clear up the precipitate.

℞ 22	Chloral Hydrate	dr. IV
	Sodium Bromide	oz. I
	Aromatic Elixir *ad*	oz. IV

The low alcoholic elixir should be used to prevent any separation.

℞ 23	Castor Oil	
	Spirits Turpentine	
	Stronger Ammonia Water, *aa ad*	oz. III

If prepared as written, a heavy sediment forms on standing. This sediment makes it difficult to pour the mixture from the bottle. Mix the castor oil with the stronger ammonia water *very well* and then add the turpentine.

℞ 24	Suprarenal conc.	gr. X
	Thyroid	gr. X
	Acid Acetylsalicylic	gr. LXXV
	Codeine sulf.	
	Aloin, *aa*	gr. V
	Ammon. Carbonate	gr. L
	divide in caps. No. XXX	

Mix all the ingredients except the ammonium carbonate together and dispense in a larger size capsule. Separately, place the ammonium carbonate in a very small capsule and place the small capsule in the large capsule. No reaction will take place and the capsules will keep indefinitely.

℞ 25	Tr. Nux Vomica	10.0
	Fe. et Amm. Citrate	1.5
	Chloral Hydrate	1.5
	Ovoferrin *ad*	120.0

Tr. Nux Vomica and iron and ammonium citrate react upon each other, causing a precipitate which imparts a cloudiness to the whole solution. Therefore, be sure the Tr. Nux Vomica is well diluted in Ovoferrin and add it to the other ingredients lastly. Also, it is advisable to check the freshness of the Ovoferrin.

HOSPITAL PHARMACY INTERNESHIPS.*

SOME NOTES ON THOSE HOSPITAL PHARMACY PRACTICES HAVING A PARTICULAR VALUE AS POSTGRADUATE EXPERIENCES.

BY H. A. K. WHITNEY.[1]

In that excellent chapter on "Hospital Pharmacy" (1), Dean Spease has written that "Pharmaceutical Educators recognize the value of the special training that a hospital pharmacist receives while serving his interneship. His new understanding of scientific medicine, rational therapy and the needs of physicians help him vastly in the practice of true professional Pharmacy outside of the hospital."

* Presented before the Sub-Section on Hospital Pharmacy, A. PH. A., Minneapolis meeting, 1938.

[1] Chief Pharmacist, Univ. of Michigan Hospitals.

"The man or woman to fill the position of hospital pharmacist should, of course, be a graduate of an accredited school of pharmacy and a legally registered pharmacist. For experience, graduate work in Pharmacology, Physiology, Pathology and Anatomy would be helpful, and a knowledge of Business Administration would be desirable."

Since the practice of Hospital Pharmacy has been discussed many times before professional groups, it is not my intention to review or repeat such discussions here. The material just referred to provides a sufficient and standard guide for the operation of such a specialized service. It is rather my intention to submit certain features and practices that have evolved in the operation of our own Hospital Pharmacy.

It should be interesting to give a bit of the historical background of this department. While the University Hospital of some twenty beds had been in operation for many years previously, it was not until the expansion of 1891 that the services of an apothecary seemed to be required. The Board of Regents of the University, having petitioned for and having been granted a newer and more commodious building, also made arrangements for providing the new institution with suitable professional services. In that year of opening the "New University Hospital" of some one hundred beds, the Board of Regents moved, in session assembled, "that the Executive Committee be authorized to appoint an apothecary in the University Hospital for one year at a salary of $200.00 annually.

The Regents also adopted a set of "Rules and Regulations for the government of the Hospitals of the University of Michigan." It will be of present interest to extract from the rules those especially pertinent to the conduct of the apothecary. These rules follow:

The Apothecary.—The Apothecary shall be subordinate and responsible to the Resident Physician. He shall have the immediate care and custody of all drugs, medicines and other articles belonging to the Department and be responsible for the same. He shall compound and make up all medicines, which may be prescribed, with exactness and promptitude. He shall deliver no medicines and other articles unless the same shall be duly entered upon the Prescription or Order Book or ordered in writing.

He shall arrange the medicines intended for each ward separately, and shall annex to the labels containing the names of the patients for whom they are respectively prescribed, written or printed directions for their use. He shall deliver them promptly to the nurses of each ward to be by them administered to the patients.

He shall be responsible for the correct preparation of all prescriptions.

He shall have charge of all the instruments belonging to the hospital and shall be responsible for them and their good order. He shall keep an account of them and shall never allow them to leave his possession without taking a proper receipt or ticket from the person so taking them. He shall make an inventory of all instruments belonging to the hospital when he enters upon his duties and on giving up his charge he shall furnish the Superintendent a like inventory countersigned by the Resident Physician.

He shall keep the dispensary and everything pertaining to it clean and in perfect order, and the same shall remain open from 8:30 A.M. to 8 P.M. in his charge. He shall observe economy in everything relating to his department, be particularly careful in the preparation and delivery of medicines and permit no noise, confusion or disorder in his premises.

With but trivial modifications these Rules and Regulations are quite as useful to-day as they were nearly fifty years ago. A pronounced evolution has shown itself in the organization of the Hospital Pharmacy Staff and to understand some of the present practices it must be remembered that the department has for some time

been operating under a "Plan for Pharmacy Interneships" previously announced and published (2). This provides for an adequate Permanent Staff in addition to a present Temporary Staff of six so-called pharmacy internes who are resident with the medical internes. Let me acknowledge here and now that many of our post-graduate instructional activities are the direct result of the presence on our staff of this youthful, interested, ambitious pharmacy interne. I may further state that this interest displayed on the part of the pharmacy interne in these activities is the sustaining and encouraging stimulus that is required to carry this activity forward. Moreover, many of the instructional deficiencies that have been overcome are due directly to the attention displayed by the individual pharmacy interne.

Medical Nomenclature.—One of the first deficiencies coming to the notice of the pharmacy interne is his lack of understanding of medical terminology and the professional lingo of the medical interne. As an initial step this situation is met through the interesting method of requiring the pharmacy interne to acquaint himself with the "Operating Room Schedule" (Exhibit No. 1) that is published each

EXHIBIT 1.

OPERATION ROOM SCHEDULE. FRIDAY, JULY 29, 1938.

Thoracic. Surgery.						
Brocklebank, Claude	423286	8	4th Stage Thoracoplasty	Alexander, Major	10:00	LcGs 18
Olanto, Fred	402650	8	1st Stage Thoracoplasty	Chamberlain, Brewer	8:00	LcGs 18
Meier, Eloise	416463	8	Schede Thoracoplasty	Haight, Sommer	11:10	LcGs 18
Beyen, Mae	312631	8	Bronchoscopy, Dilatation	Haight, Chang	12:30	LcGs 18
Oral. Surgery.						
Weber, Ida	427215	6C	Staphylorrhaphy	Kemper, Hagan	8:00	Et 21
McMahon, Eunice	271801	6C	Cheiloplasty	Hagan, Harding	10:30	Et 30

day. To make certain such interest is sustained those of us on the permanent staff may daily require the explanation of some posted operation. The interne is requested further to determine the meaning of many of the common stems, prefixes, suffixes and abbreviations. His instruction is carried further by the established conduct in the Hospital Pharmacy, as for example, the use of such definite language as "inner canthus" not "corner of eye," "ptosis" not "drooping eyelid," "auricular fibrillation" or "cardiac decompensation" not just "heart disease" and so on. This should not be looked upon as a needless activity for it is always definitely informative and makes for a better interpretation of formal discussions and papers.

Operations and Autopsies.—To develop a better acquaintanceship with anatomy, physiology and pathology the pharmacy interne is encouraged and directed to attend, first of all, autopsies. Such examinations are frequently held at times when the pathologist can give some individual attention to the pharmacy interne and the obvious value of such teaching is inestimable. Later when the pharmacy interne is properly prepared to become an observer at some operation such participation is also encouraged. Emergency operations are especially interesting and useful for instruction. Exposure to experiences of such broadening influence is bound to have its effect on a better understanding by the pharmacist interne of all medical problems and situations. It may be well to note here that our entire medical and surgical staffs are very kindly disposed toward our department and the pharmacy interne is shown an attention that naturally is appreciated but, more important, is the effect of fraternity.

Medical and Surgical Staff Meetings.—During the course of the regular academic year each of the various departments of the hospital regularly holds scheduled staff meetings. These staff meetings are usually scheduled at weekly intervals and are, of course, concerned with the problems and proceedings of that particular department. For example, there are the meetings of the Medical Journal Club, Otolaryngology Staff Meetings, Surgery Staff Meetings, Clinical Pathological Conferences, Pediatrics Journal Club, etc. In addition, the School of Medicine promotes many extra-curricular activities and meetings such as the Biological Chemistry Seminar, Academy of Science, Annual Memorial Lectures and special lectures of many sorts. In any or all of these meetings or conferences there may be much for the intellectual profit of the Hospital Pharmacist. An even casual reading of the titles of material to be presented will lead to this positive conclusion. The pharmacy interne is therefore encouraged and directed to avail himself of these opportunities and usually is happy to voluntarily do so.

Pharmacy Staff Meetings.—This particular policy of the other Departments of Medicine in continuing instruction, discussion and conference, has led gradually to the development of meetings of the pharmacy staff. These meetings are generally in the charge of one of the Assistant Chief Pharmacists and take on the general nature of the round-table discussion. Mention might well be made of one unique method, developed by the pharmacy internes, for promoting these discussions and continuing their interest. A sealed box is placed in the department, convenient for the receipt of any written question that may arise in the mind of any one of the staff. On the other hand many questions are presented to various members of the staff by those with whom they come in contact and perhaps not feeling possessed of complete knowledge for a proper and intelligent answer the particular member may pass the question along to the group for subsequent consideration. The questions are unsigned and are offered as a challenge in the group meetings by the person in charge. The pharmacist placing the question in the receptacle is however supposed to be fortified with the proper answer. It is interesting to note that by far the greater number of questions submitted deal with therapeutic applications and procedures; a probable natural reaction to the type of questions placed before the pharmacist interne by the medical interne.

Miscellaneous.—In order to explain and clarify the environment of the pharmacy interne it may be well to speak of contributory conditions. Obviously much clinical experimental work is always going on in the hospital that proves of great interest to the pharmacy interne. The Hospital Pharmacy is equipped with an ample and modern library of texts and journals that serves to supplement the more expanded Hospital Library, which by the way is a branch of the University General Library. Also, and of greatest importance, is the fact that the pharmacy interne is quartered and lives with the medical interne, sharing his social life as well as his professional life. This latter situation goes far toward developing a mutual respect for their respective abilities and qualifications.

CONCLUSIONS.

It is presumed that the present-day pharmacy interne has a comprehensive training in pharmaceutical and organic Chemistry, supplemented by a serious

training in Pharmacology, to permit his necessary understanding and required evaluation of the newer therapeutic agents, that are mostly synthetic.

The pharmacy interne must of necessity learn the medical nomenclature and professional lingo of the medical interne as a conversational medium.

In adopting this conversational medium, the pharmacy interne can enjoy the medical meetings and discussions, be assured of a broader understanding of Physiology, Anatomy, Pathology and develop an expanded Pharmacology. His need for a broadened and modernized Materia Medica is unquestionable, since in effect he becomes a practicing pharmacologist.

It is further noticeable that the internist and the surgeon are ever willing to consult with the pharmacist on the most beneficient treatment for the patient. The pharmacist on his part must certainly be fortified with a complete and discriminating knowledge of all existing Materia Medica; must be able to understand the explanations and diagnoses of the physician or surgeon; and finally must be able to impart information that is intelligent and honest.

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(2) Whitney and Watts, "A Plan for Pharmacy Interneships at the University of Michigan Hospital," JOUR. A. PH. A., 24, 852 (1935).

THERAPEUTICS COMMITTEE.*

BY ROGER K. LAGER.[1]

A Therapeutics or Pharmacy Committee is a committee organized to promote rational therapeutics in a hospital. It is usually composed of several physicians and the Directing or Chief Pharmacist. Each physician on the Committee should represent a major service such as medicine, surgery, obstetrics and pediatrics.

The purpose of this Committee is to make recommendations to the Medical Council or Executive Medical Board. These should include: *first*, recommendations relative to additions to and deletions from the stock carried by the pharmacy of the hospital; *second*, the functions which it (the Committee) should assume; *third*, its policy of operation; *fourth*, such other recommendations upon pharmaceutical problems as from time to time may seem necessary.

The power of this Committee rests in its ability to make recommendations to the executive medical council of a hospital. By virtue of the fact that the Committee is composed of representatives of each major service and the pharmacy, its discussions must result in a more harmonious understanding and coöperation between the medical staff and the pharmacy.

The Committee should have within its scope the policy of operation of the hospital pharmacy, out-patient department pharmacy and professional stores providing the latter two are under the jurisdiction of the pharmacy.

It should include control over drugs, preparations and proprietaries carried and pharmaceutical products or sterile solutions manufactured by the pharmacy.

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* Presented before the Sub-Section on Hospital Pharmacy, A. PH. A., Minneapolis meeting, 1938.

[1] Pharmacist, University Hospitals of Cleveland, Cleveland, Ohio.

In the University Hospitals of Cleveland, the out-patient department pharmacy and professional stores are under the supervision of the pharmacy. Professional stores include all such items as are used in the care and treatment of a patient, *i. e.*, catheters, hot water bottles, surgical instruments, laboratory supplies, cotton, gloves, etc. Professional stores are separated from the general stores where such items as are used in the upkeep or maintenance of the ward, division or building are carried, *i. e.*, stationery, charts, groceries, dishes, etc.

The functions of the Committee are perhaps best illustrated by citing examples. The first of these is the "Drug Policy." The purpose of this plan is to promote rational therapeutics in both teaching and practice, to discourage the use of secret formula proprietaries, as well as those of known composition having no demonstrable superiority over official preparations, and to reduce the cost of drugs to the hospital. At the same time, it is felt that opportunity must be afforded for the controlled study of new preparations as well as those for which some special virtue is claimed.

DRUG POLICY.

The pharmacy shall stock, or be prepared to supply, preparations of the United States Pharmacopœia, National Formulary and New and Nonofficial Remedies. Where New and Nonofficial Remedies lists several articles "having similar composition or action," a selection of such preparations, chosen by the Pharmacy Committee and approved by the Medical Council, shall be carried. This is necessary because of the expense involved in carrying a large stock of infrequently used items. A selection shall also be made where New and Nonofficial Remedies lists identical products of several manufacturers.

Preparations carried by the Pharmacy, excluding such sera and expensive preparations as may be determined from time to time by the Administration and Pharmacy Committee, shall be included in room charge to patients. The pharmacy shall procure other drugs or preparations for hospital patients on request of the visiting physician. Such special orders, however, are to be charged to the patient.

The Pharmacy Committee shall provide a book known as the Formulary and revise it from time to time. It is to be considered as supplementary to the United States Pharmacopœia, National Formulary and New and Nonofficial Remedies. It is to contain those preparations of drugs and chemicals, sizes of tablets, ampules, suppositories, etc., which are kept by the pharmacy and may be called for under distinctive titles, and which are ready to be dispensed either to out-patient or hospital departments. Its purpose may be said to be one of convenience in ordering and prescribing.

No new drug or preparation is to be carried by the pharmacy until it has been recommended by the Pharmacy Committee and approved by the Medical Council.

Proprietary Preparations.—Any drug or preparation, not carried by the pharmacy, which is requested by a visiting physician for a private patient will be procured from an outside pharmacy in the amount ordered by the physician and charged to the patient.

Drugs for Research.—The above regulations are not intended to hamper the controlled study of any drug or proprietary article. The pharmacy will, therefore,

supply a specified amount of any preparation for a member of the teaching staff after the approval of the head of his service. When this supply is exhausted more will not be supplied, nor will it be added to the pharmacy stock until a report showing its value has been given to the Pharmacy Committee.

A similar policy was drawn up at a later date to govern the Professional Stores.

PROFESSIONAL STORES POLICY.

Preamble.—The Professional Stores were placed in the pharmacy and under the jurisdiction of the Pharmacy Committee by vote of the Medical Council November, 21, 1934.

There are no standard books nor lists of approved instruments and professional supplies such as exist for drugs, chemicals and pharmaceuticals. Some standards have been developed by individuals, institutions, manufacturers and by the government, but in the end the choice of items stocked and used in any given institution should rest upon responsible medical opinion.

The purpose of this written policy is to provide for *responsible medical opinion* upon each item of stock contained in the professional stores of the University Hospitals.

Policy.—(1) The Pharmacy Committee shall prepare a list of all items stocked in the Professional Stores. This list shall be known as the *Instrument and Professional Stores List.*

(2) Items which appear on this list, and which are commonly used throughout the institution, shall be selected upon the recommendation of the Pharmacy Committee subject to approval of Medical Council. No new item will be added to the general stock until such item has been recommended by the Pharmacy Committee.

(3) Items, the use of which is confined to one department, shall need only the approval of the Head of that department before purchase. Such items will not be added to the general stock without the approval of the Head of that department.

(4) Non-returnable items, indicated by an asterisk, will be charged to the patient.

(5) Any item, not upon the list, which is requested by a visiting physician for a private patient will be procured and charged to the patient.

(6) Nothing in the above regulations will prohibit the trial of an instrument or of any item of professional stores furnished by a manufacturer provided such trial is in the nature of investigation to determine its usefulness.

(7) Nothing in the above regulations shall prevent a physician or surgeon from employing instruments of his own that are considered by the Head of the department as too expensive or too infrequently used to warrant making stock items of them.

Another item of importance that was accomplished by the Pharmacy Committee was the revision of the Formulary of the University Hospitals. The old edition of the Formulary listed all of the prescriptions by number. However, this system did not prove to be satisfactory and was discontinued in the new edition.

FORMULARY.

"The formulary is designed as a book of ready reference, containing the formulæ of preparations carried ready mixed in the pharmacy, solutions ready prepared and sizes of tablets in stock. The formulary does not contain all the preparations carried in the Hospital Pharmacy. The pharmacy is 'prepared to supply preparations in the United States Pharmacopœia, National Formulary, and the New and Nonofficial Remedies.' Where the latter lists several preparations

having similar composition or action, a selection has been made. The New and Nonofficial Remedies' preparations available are listed alphabetically in the back of the formulary. While prescribing is not limited to preparations listed in the formulary, these can be dispensed most readily and at least expense.

"Preparations, wherever possible, should be ordered by the formulary name or official abbreviation which is listed after the title of each prescription. If amounts or directions other than those given are required, they must be clearly written on the prescription. Unless so written, the directions appearing in the formulary will be given to the patient. Where no directions are listed, these must be written in.

"The pharmacist is authorized to reject all prescriptions not clearly and legibly written.

"Drugs will be sold in the pharmacy only on presentation of a prescription signed by a physician.

"Prescriptions for 'home going' patients must be filled in the pharmacy, and not from ward or accident ward supplies. If the pharmacy is closed, they must be filled at a commercial drug store.

"The more expensive preparations are marked with a star (*)."

NARCOTIC REGULATIONS.

1. All orders for narcotics must be written in the doctor's order book before administration.

2. The United States Government recognizes p.r.n. orders for narcotics only when a specified number of doses is indicated as: Morph. Sulph. Gm. 0.010 (H) q. 3h, p.r.n. x 4. The time intervals between doses should be specifically indicated.

3. All narcotics will be administered by mouth unless the order indicates otherwise.

4. Do not write orders for narcotics in the following form: Morph. Sulph. Gm. 0.010 (H) s.o.s. and s.o.s. and s.o.s. The method in 2 should be adhered to.

5. No dosage upon a p.r.n. order shall be administered more than twelve times without a new order.

6. When a new order for narcotics is written, any previous order for a narcotic is automatically cancelled.

7. P.r.n. orders are good for 24 hours only, unless used or cancelled. This means that narcotic orders are not to be cancelled at 7 A.M. unless the orders expire at that time.

8. No nurse may administer a narcotic drug upon p.r.n. order without the permission of the nurse in charge. The night nurse may administer such drugs, but in case of doubt, the question should be submitted to the night supervisor or head nurse.

NOTE: Before administering any narcotic the nurse should observe the patient for possible toxic signs from previous dosage, such as:

(*a*) Slow respiration (12 or below); (*b*) Shallow or irregular respiration; (*c*) Cyanosis; (*d*) Pin-point pupils in infants; (*e*) Stupor.

9. The method of checking is as follows:

(*a*) The order reads: Morph. Sulph. Gm. 0.010 (H) q. 3h, p.r.n. x 4. Each time an order is written the nurse writes it on the order sheet as follows: 9 A.M. Morph. Sulph. Gm. 0.010 (H) *No. 1 dose* by p.r.n. order. 12:30 P.M. Morph. Sulph. Gm. 0.010 (H) *No. 2 dose* by p.r.n. order. This is repeated until the last dose is given, at which time the nurse writes: 9 A.M. Morph. Sulph. Gm. 0.010 (H) *No. 4 and last dose* by p.r.n. order.

In each case the number of the dose is underlined in red to facilitate keeping account of the doses. When the last dose is given the original order is cancelled by a red line, as in the case of any other order. A new order is then necessary before any further administration.

(*b*) All such narcotic orders are checked in red by the nurse who administers them, as heretofore, *i. e.*, name, time, tablets *used*.

Each nursing unit carries a standard stock of narcotic drugs. Any narcotics that are desired by a nursing unit for the treatment of patients that are not in this stock must be ordered on a doctor's prescription, giving the name and address of the patient, the division number and the doctor's name and the hospital's narcotic registry number.

THE WRITING OF NARCOTIC PRESCRIPTIONS.

All members of the Medical Staff of the University Hospitals may write narcotic prescriptions for patients on the nursing units, patients who are being discharged from the hospital whether they be private, semi-private or free patients, patients in the out-patient department, and members of the personnel (through the medium of the health clinic), if they will use the narcotic registry number of the hospital.

The United States Government requires that narcotic prescriptions containing the following information: name and address of the patient, name and address of the prescribing physician and the physician's registry number. Members of the staff not having narcotic registration themselves will use the hospital registry number. The Government also requires that narcotic prescriptions be written in full, giving the specific quantity in each dose and the exact number of doses, or the total amount of narcotic to be used in the prescription.

A comprehensive list of drugs and treatments for poison cases was prepared and distributed to Emergency and Admitting suites.

The Pharmacy Committee took the following action with regard to the sale of drugs on requisition to members of the personnel of the hospital, also the dispensing of drugs on internal requisition to various department heads for distribution to the personnel of that department.

"The Pharmacy Committee is of the opinion that the requisitioning and dispensing of drugs by heads of departments, who are not physicians, constitutes practicing of Medicine without a license and, therefore should not be tolerated.

"The Committee is also of the opinion that dispensing drugs to individuals on their own request encourages self-medication which should not be encouraged in an educational institution such as the University Hospitals.

"The Pharmacy Committee, therefore, recommends that the sale of drugs by the Candy Shop be prohibited and that the pharmacists be instructed to issue drugs only through the established channels for use on the wards or on prescription of a physician."

By way of explanation the Candy Shop and Newstand had formerly sold such items as Aspirin, Bromo-Seltzer, etc.

A request was received from the Medical Council for an official list of accepted abbreviations to be used in the hospital. The Committee took the following action regarding this:

"*First*, the Pharmacy Committee recommends that in orders for the administration of drugs and medications the only abbreviations recognized be the list of commonly accepted Latin abbreviations published in the Hospital Formulary; that the only abbreviations for drugs or preparations accepted be the official abbrevia-

tions of the United States Pharmacopœia and National Formulary or the English abbreviations in the Hospital Formulary.

"*Second*, that a list of permissible abbreviations for commonly used orders other than medications, such as E.K.G., B.M.R., etc., be prepared in collaboration with the Nursing Department. This list was to be forwarded to the Medical Council for approval and then attached to the Doctors' Order Books."

The following action was taken in regard to refilling of prescriptions and issue of copies of prescriptions:

"That no prescriptions filled in the pharmacy of University Hospitals of Cleveland for hospital patients can be refilled or copies given except by permission of the patient's private physician. Under no condition, will prescriptions be refilled for staff cases inasmuch as they should return to the dispensary for further treatment."

Staff patients are those who are hospitalized in the ward service, attended by the staff physicians, and who for the most part are non-paying patients.

The Pharmacy Committee recommended that a residency in Pharmacy be established, the resident to be appointed for one year. During that year he is to have opportunity to work in every phase of hospital pharmacy. By virtue of the fact that he is living in the hospital a continuous "on call" schedule was originated. There is a pharmacist on call at all times of the day and night to take care of any emergencies that may arise.

The Committee has on its records the discussion of innumerable drugs or preparations for the pharmacy and items for the Professional Stores which will not be mentioned here. Other various activities of the Committee are listed below:

(1) Discussion of the cost of more expensive medications and calling the attention of the staff physicians to these medications.
(2) Discussion of the manufacture of sterile solutions as to type of flask, closure, label, date of expiration and technique of manufacture.
(3) Selection of one preparation to be carried in stock by the pharmacy when several products having similar composition or action or identical products of several manufacturers are accepted by the New and Nonofficial Remedies.
(4) Discussion and recommendations as to what types and amount of biologicals should be carried in stock by the pharmacy.
(5) Recommendations regarding the remodeling of the pharmacy.
(6) Discussion and recommendations as to various antiseptics and germicides.
(7) Study of syringe sterilization.
(8) Study of various sedative drugs.
(9) Study of various soaps.
(10) Discussion and recommendations concerning intravenous sets.

While all of the above activities and functions of the Pharmacy Committee are concerned with the University Hospitals of Cleveland, the idea and purpose could be very well adapted to any hospital pharmacy. The value of this Committee has been established not only in being able to save money on the drug budget but also in promoting the practice of ethical pharmacy and rational therapeutics.

REFERENCES.

(1) Minutes of the Pharmacy Committee, University Hospitals of Cleveland.
(2) Formulary of the University Hospitals of Cleveland.

HISTOLOGY—ITS IMPORTANCE IN PHARMACEUTICAL EDUCATION AND LEGISLATION.*

BY FREDERICK GRILL.[1]

Professions at large are noted for their ultra-conservative methods and the slowness through which they adopt changes in their profession. Pharmacy is no exception. There are times when it is possible to gain a transitory and fleeting glimpse of one of the many factors that eventually produce a change in the established order of things; if we observe these factors we should take time for consideration and devote some attention to the possible effects.

Such a factor is at work in the fields of pharmaceutical education and legislation which, in the opinion of some, should not be overlooked or relegated into the background. The particular influence referred to is the increasing importance of endocrinology in the medical picture. Any development in Medicine, especially if it is concerned with therapeutics and dispensing of therapeutic agents eventually becomes a problem of the pharmacist and his relationship to the public health professions. Endocrinology is presenting a problem and is creating new therapeutic agents and new interests for pharmacists. Frankly, the ever-increasing use of glandular substances and their derivatives is being forced upon us a pharmacists whether we like it or not, and it behooves us as professional individuals to be able to present definite knowledge of certain phases of the subject. This has been done in a more or less orderly manner through medical and pharmaceutical research, the demand for the products resulting from this research, and the recognition by some of the states that it may be desirable to control the dispensing of these products by legislation. It may readily be seen that the pharmacist, to fully appreciate and understand progress in the science of endocrinology, thereby enabling him to take his rightful place in the public health scheme, must have a fundamental training in phases of the subject.

The obvious time and place for the pharmacist to gain this fundamental knowledge is in the pharmacy college during his student days. It has not been so very long ago, and the condition may exist yet, that, as pharmacy students, we listened to an instructor in Physiology relate briefly the names, and probably omit much regarding the function, of the glands of internal secretion, the omission being due to the rather rudimentary state of the science of endocrinology. We were later introduced to the medicinals from animal sources official in the U. S. P. and N. F., and learned the nomenclature, the use and the dose of the various substances. This seemed to suffice at that time. At present this sort of training is not sufficient to give the student a basic understanding of the science of endocrinology and will not equip him to serve the physician and dentist, and in that way render a true public health service. It would seem that the pharmacist is woefully lacking in fundaments of the subject, and that becomes an immediate problem of the pharmaceutical educator.

At the present time we may be witnessing a change that may eventually contribute materially to a permanent alteration in professional practice. The time is

* Presented before the Section on Education and Legislation, A. PH. A., Minneapolis meeting, 1938.

[1] North Pacific College of Oregon, Portland, Ore.

here for a study of suggested changes in curriculum that will fit our students to render a more efficient professional service, especially in the rather extensive field of endocrinology. What courses should be introduced into the pharmacy curriculum to accomplish this? There is no question that many and varied are the subjects that might be thought of, but surely there can be no question as to the value of a study which would give the student an understanding of normal tissues from whence come the products so widely used in the treatment of glandular dysfunctions; such a study is histology.

Why introduce a subject like histology into the pharmacy course? Histology will give the student a picture of the normal structure and location of the tissues of the body, it will give him a background for advanced work, it will enable him to discuss as a practitioner associated problems with physicians, and will place him in a position to assist in the formulation of proposed legislation directed at glandular substances and their derivatives. Let us consider more specifically the above statements.

The present literature of Medicine and Pharmacy, with reference to the science of endocrinology, is rather extensive, which indicates the vast amount of original investigation that has been done, and pointing to work that must be done to further the science. As a matter of fact, one need not seek the academic journals of the scientist to find a paper on this subject; all one need do is consult one of the many advertising mediums of the pharmaceutical manufacturers and in all probability some authentic information on this subject will be found. So much of the literature, be it the erudite journal or the advertising medium, contains histological description in order to place before the reader an accurate picture of a piece of research or the development, standardization, use and dosage of a particular product of glandular nature. The assumption must have been made by the authors of this literature that their readers will be trained in the fundamentals, trained in histology to know the appearance of normal tissue. Note that this material, a goodly portion of it, is being directed at the physician and the pharmacist through their respective journals. The point is this; many factors are forcing histological nomenclature, description and thought into the pharmacies of to-day, and the individual pharmacist to serve efficiently must have accurate knowledge of the location, normal structure (microscopic and macroscopic) and characteristics of body tissue. This knowledge will have to be gained by the somewhat questionable route of self instruction or in a regularly established course of instruction in a pharmacy college. By obtaining this instruction in a pharmacy college the student would have the advantage of correct information and procedure, and further, prepare himself for a better appreciation of advanced work in Biological Assaying, Pharmacology and advanced work in Pharmacy.

Somewhere in the pharmacy course, usually near the close, the student is introduced to some of the newer pharmaceuticals of New and Nonofficial Remedies, and among these newer pharmaceuticals are representatives of the endocrine glands. The student's ability to fully appreciate, organize and retain the essential information of the newer Pharmacy is directly proportional to his knowledge of fundamentals of Pharmacy. We have considered Pharmaceutical Botany as being essential because of its relationship to the future study of Pharmacognosy; yet, we have given no thought to the proper background for such increasingly important

and popular studies as Pharmacology and advanced Pharmacy as associated with current literature and references. Histology offers an ideal background for such work, and gives the student a fundamental training that will be drawn upon many times in his professional career of specialist in medicines—their source, preservation, etc. It is quite possible that histology is of sufficient importance to replace much of the present-day Pharmacognosy that is being given to pharmacy students, and it may be predicted that histology will become more and more basic to the study of Pharmacy.

It seems that about seventy-five per cent of the students in Pharmacy establish themselves eventually as pharmacists in a retail outlet wherein physicians' prescriptions are being compounded and the physicians' offices are being supplied, at least in part, with chemicals and pharmaceuticals. Immediately the young pharmacist is faced with the problem of the traveling representative of a pharmaceutical manufacturer promoting a new and recently developed therapeutic product by calling upon the physicians in the community. So many times the physician considers the pharmacist as the one to properly evaluate and classify these newer products and will call upon him to ask further questions regarding the therapeutic agent shown by the representative of the manufacturer. The pharmacist must be able to supply the correct information, as well as the product itself, in order to retain his professional prestige and the confidence of the physician. Many times the questions are regarding problems of administration, dosage and effect of preparations related to the endocrines; the young pharmacist must know the answers or where to find the answers to these questions. The proper orientation of standardization, dosage, administration and effect of glandular substances or related compounds is one of the outstanding difficulties that many pharmacists face to-day. Apparently the pharmacist's job is to be more than a medium of transfer of an item from the shelf to the patient on a physician's order; he is expected to contribute to the advancement of Medicine and Pharmacy and have rather extensive knowledge of the items that he dispenses. To gain this, he must continually search current medical and pharmaceutical literature. It helps so much to have had the fundamentals in pharmacy college, and until one actually encounters this problem it is impossible to conceive the value of organized histological information in solving so vital a problem to professional practice.

In these days of fashionable slimness the use of thyroid gland has been overdone, and in order to protect the public from overindulgence in such dangerous medication, it has been deemed necessary to regulate its sale by law. As a matter of fact, the State of Oregon, by promulgation, declares epinephrine in certain concentration, pituitary gland, thyroid gland and compounds or preparations of these, shall be sold at retail only on the written prescription of a duly registered physician and by a registered pharmacist recognized by the Oregon Board of Pharmacy. If men propose laws and promulgations governing the sale and distribution of pharmaceutical products to a legislative body for adoption, it should follow that the ones making the proposals know whereof they speak and write. Again, the pharmacy colleges should consider the possibility that there are other courses basic to Pharmacy and they might be properly introduced into the curriculum; it would aid those later interested in legislative procedure. If the trend in legislation to restrict the distribution of glandular substances continues, which it might very well

do, and when our students of to-day become the individuals to present the legislation of to-morrow, we want to see them well qualified to do so by reason of their collegiate training. With reference to glandular substances the student would do well to have fundamental training in histology.

We think of legislation and immediately court trials come to mind. Not so long ago there took place a trial in which the question involved was whether a certain substance was a food or a drug. The main ingredients of the particular compound, as established by evidence, were liver and stomach. It was established by expert testimony that it would be possible by microscopic examination to show at least qualitatively the presence of these substances. It is interesting to note that in this trial one of the expert witnesses was a pharmacist. Happenings of this nature remind us that we never know what the following day has in store for us or what our students are apt to do. There is no doubt that the pharmacist on the witness stand in this case would have occasion to use any histological information concerning liver and stomach he might have.

Few of us take time out to contemplate the tremendous responsibility, moral and legal, that is placed upon the pharmacist in practice, no matter how little the professional practice he really carries on. As educators we can assist by anticipating the needs and wants of years to come, and shaping our courses of study to fit the conditions that medical and pharmaceutical research may present. From all appearances, the study of endocrinology will not die in a few short years, but rather open new fields for research in which the pharmacist will play an important part. It will open new fields in legislation and court procedure, and the pharmacist who is not equipped cannot fit into the picture. A closer coöperation between the physician and pharmacist is coming. As a matter of fact, it is here now; many physicians expect the pharmacist to act as consultant in their proper capacity, to be sympathetic with respect to the physician's professional problems, and further, to be able to understand the physician's language.

Once again to the pharmaceutical educators training young men and women to enter a professional career of Pharmacy, consider carefully changes beginning to manifest themselves and think about adapting courses of instruction to meet the change. In the field of endocrinology, histology will materially aid the pharmacist in fulfiling his mission in the scheme of public health.

U. S. CIVIL SERVICE EXAMINATION FOR PHARMACOLOGIST.

The Civil Service Commission has recently announced an open competitive examination No. 29 (Unassembled), for Senior Pharmacologist, $4,600 a year; Pharmacologist, $3,800 a year; Associate Pharmacologist, $3,200 a year; and Assistant Pharmacologist, $2,600 a year.

Applications must be on file not later than March 27th, or March 30th for the Western States. Applicants will not be required to report for examination at any place but will be rated on the extent of their education and on the extent and quality of their experience. Application Form 8 can be secured from the Commission.

Among other requirements applicants must have successfully completed a full four-year course leading to a bachelor's degree in a college or university of recognized standing, majoring in Pharmacology, Toxicology, Pathology, Pharmacy, Chemistry, Biology or a closely related subject.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1938–1939.

Office of the Secretary, 2215 Constitution Ave., Washington, D. C.

LETTER NO. 5.

February 15, 1939.

To the Members of the Council:

41. Use of Text of N. F. VI. Motion No. 9 (Council Letter No. 4, page 119) has been carried with the following members voting: YES—Dm, Ro, Ke, Mo, Mi, Ga, La, Sw, Ck, Je, Hi, Co, Du, Fi, Li, Ch.

42. Selection of an Auditor. Motion No. 10 (Council Letter No. 4, page 119) has been carried with the following members voting: YES—Dm, Ro, Ke, Mo, Mi, Ga, La, Sw, Ck, Je, Hi, Co, Du, Fi, Li, Ch.

43. Alabama Polytechnic Institute Student Branch. Motion No. 11 (Council Letter No. 4, page 119) has been carried with the following members voting: YES—Dm, Ro, Ke, Mo, Mi, Ga, La, Sw, Ck, Je, Hi, Co, Du, Fi, Li, Ch.

44. Election of Members. Motion No. 12 (Council Letter No. 4, page 119) has been carried with the following members voting: YES—Dm, Ro, Ke, Mo, Mi, Ga, La, Sw, Ck, Je, Hi, Co, Du, Fi, Li, Ch. Applicants for membership numbered 150 to 336, inclusive, are declared elected.

45. Time of 1939 Meeting. Local Secretary Robert C. Wilson and his associates have recommended that the week of August 20th be selected as the time for the 1939 meeting at the Atlanta Biltmore Hotel, Atlanta, Georgia. This recommendation has been approved by the N. A. B. P. and the A. A. C. P.

(*Motion No. 13*) It is moved by Kelly that the week of August 20th be approved as the time for the 1939 meeting of the ASSOCIATION and affiliated organizations.

46. Temple University Student Branch. The following application accompanied by the membership applications and dues for the signers together with the proposed Constitution have been received:

"The undersigned students of Temple University wish to establish a Student Branch at the School of Pharmacy and petition the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION to approve the formation of the Branch.

Professor Frank H. Eby has been selected to act as Student Advisor and we present his name for approval.

Zosia J. Drozd	Samuel Rubinstein	Reba Nevel
Alton G. Grube	Alan-Gordon C. Vogt	Rose Parker
M. Irvin Lipman	Solomon Wexler	Rosella Rumore
Helen Pachuta	Grellanda Eannaccone	Marie Steigerwalt
Eugene Reese	Donald F. Johnson	William W. Wittmer, Jr.

PREAMBLE.

We, the students of Temple University, in order to place ourselves in a more favorable position for study, acquire a better knowledge of our professional problems, for the purpose and privilege of sharing in the undertakings and interests of the AMERICAN PHARMACEUTICAL ASSOCIATION, do constitute ourselves into a Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION and adopt this Constitution and By-Laws.

CONSTITUTION.

ARTICLE I—*Name.* The name of this organization shall be the Temple University Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

ARTICLE II—*Members.* This branch shall consist of active and honorary members.

ARTICLE III—*Active Members.* Any person actively enrolled in the Temple University School of Pharmacy upon signifying his intention of adhering to the provisions enumerated in the Preamble and in the Constitution of the AMERICAN PHARMACEUTICAL ASSOCIATION, and to the Preamble and By-Laws of the Temple University Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, may be elected to active membership in this branch by a vote of approval of three-fourths of the active enrollment at the time.

ARTICLE IV—*Honorary Members.* Pharmacists, teachers, chemists and other persons who may be thought worthy of the distinction may be elected honorary members by a unanimous vote. They shall not be required to contribute to the funds nor shall they be eligible to hold office or to vote.

ARTICLE V—*Officers.* The officers of the Branch shall be a president, vice-president, secretary and treasurer.

ARTICLE VI—*Student Advisor.* The student advisor shall be a member of the faculty of the School of Pharmacy of Temple University and a member of the AMERICAN PHARMACEUTICAL ASSOCIATION. He shall be appointed by the AMERICAN PHARMACEUTICAL ASSOCIATION, upon recommendation of the Student Branch, in January to serve until December.

ARTICLE VII—*Committees.* At the first meeting in January of each fiscal year or as soon after as possible, the president shall appoint three standing committees as follows: A Committee on Program to consist of three members; a Committee on Student Activities to consist of three members; and a Committee on Membership to consist of three members.

ARTICLE VIII—*Executive Committee.* The officers of the Branch and the chairman of the standing committee shall constitute the Executive Committee, to transact all the necessary business usually transacted by such a committee.

ARTICLE IX—*Meetings.* The meetings of the Branch shall be held at least once a month and as many more times as might seem advisable from the opening date of the school each year to the close. Date of the meeting shall be selected by the officers of the Branch.

ARTICLE X—*Quorum.* Seven members shall constitute a quorum.

ARTICLE XI—*Fiscal Year.* The fiscal year of the Branch shall be from the first of January until the thirty-first day of December of the following year.

ARTICLE XII—*Elections.* The officers shall be elected by ballot by a majority at the last meeting held in December and shall be installed at the first meeting held in January, and shall serve for one year or until their successors have been elected. Nominations for officers shall be made at a meeting previous to the meeting at which the election is held.

ARTICLE XIII—*Presiding Officers.* In the absence of the president, the next succeeding officer as stated in Article V shall take the chair.

ARTICLE XIV—*Secretary.* The secretary shall keep fair and correct minutes of the proceedings of the meetings and send reports of the same to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION as often as required, and to such journals and newspapers as he may deem proper. He shall preserve on file, all reports and papers of every description presented to the Branch, and shall be charged with necessary business and scientific correspondence. He shall read all papers handed to him by the president for the purpose and shall call and record all ayes and nays, whenever they are required to be called, shall notify the chairman of every standing and special committee of his appointment, giving him a list of his colleagues and stating the business upon which the committee is to act.

ARTICLE XV—*Treasurer.* The treasurer shall collect and take charge of the funds of the Branch and shall give receipts for the same. He shall pay no money except upon order of the secretary, countersigned by the president, and accompanied by the proper vouchers. He shall present a statement of the condition of the Branch, at each December meeting. He shall receive the amount of his expenses indigent to the duties of his office.

ARTICLE XVI—*Order of Business:* (1) Reading of the minutes of the previous meeting; (2) Introduction of newly elected members; (3) Unfinished or deferred business; (4) New business; (5) Program; (6) Nominations or elections; (7) Adjournment.

ARTICLE XVII—*Amendments.* The constitution shall be amended only upon vote of three-fourths of the members of this Branch who are in regular attendance at the Univerity at the time the proposed amendment shall be submitted.

ARTICLE XVIII—*Rules of Order.* On all points not specifically mentioned in the By-Laws of this Branch, the By-Laws of the AMERICAN PHARMACEUTICAL ASSOCIATION shall take precedence over the other decisions on parliamentary rule.

(*Motion No. 14*) It is moved by Little that the application to establish the Temple University Student Branch of the ASSOCIATION and the proposed Preamble and Constitution be approved.

47. *Applicants for Membership.* The following applications, properly endorsed, accompanied with the first year's dues, and recommended by two members of the ASSOCIATION, have been received:

Nos.: 337, Maurice Slagle, 601 Campus, Pullman, Wash.; 338, James D. Bradbury, 2725 Grand Ave., Louisville, Ky.; 339, Raymond R. Lucas, 303 Lansing, Louisville, Ky.; 340, Hugh E. Wedding, Clovenport, Ky.; 341, Jesse Hanger, Sellersburg, Ind.; 342, Samuel H. Horn, 395 Lindsey St., Frankfort, Ky.; 343, Harry W. McIntosh, 29 W. Spring St., New Albany, Ind.; 344, J. P. Scott, Eli Lilly & Co., Indianapolis, Ind.; 345, Howard E. Fleischer, 124 Lexington Ave., Albany, N. Y.; 346, Rosita Azize, William Johns No. 27, Rio Piedras, P. R.; 347, Albert W. Lewing, 401 Codwise Ave., New Brunswick, N. J.; 348, Leo Reich, 114 Judor Pl., New York, N. Y.; 349, Jacob S. Dorfman, 115 W. 68th St., New York, N. Y.; 350, Orville L. Prather, 106 W. 6th St., Tulsa, Okla.; 351, Waldemar Gnerich, 503 Market St., San Francisco, Calif.; 352, Patrick H. O'Malley, 190 Stevenson St., Buffalo, N. Y.; 353, John Heerema, 90 State House, Des Moines, Io.; 354, David B. Getz, Bel Air, Md.; 355, Henry J. Wildhack, 103 S. Main St., Newark, N. Y.; 356, Thos. O. Trisler, 5224 Lindenwood, St. Louis, Mo.; 357, John J. Bamberg, 7159 Wentworth Ave., Chicago, Ill.; 358, Harry B. Reibel, 930 E. Grand St., Elizabeth, N. J.; 359, Mary R. Kettl, Mercy Hospital, Pittsburgh, Pa.; 360, Frank J. Stein, 167 Varick St., New York, N. Y.; 361, William Parr, 704 Franklin St., Tampa, Fla.; 362, E. W. Gibbs, 1029 S. 20th St., Birmingham, Ala.; 363, Edward T. Bischoff, Ivoryton, Conn.; 364, Joseph Greenberg, 216 Columbus Ave., New York, N. Y.; 365, James H. Murray, 443 Lakewood, Detroit, Mich.; 366, Conrad J. Badzmierowski, 4218 Archer Ave., Chicago, Ill.; 367, Murray Breese, 12 E. 41st St., New York, N. Y.; 368, Frank Hulme, Jr., 325 S. Trenton Ave., Wilkinsburg, Pa.; 369, John H. Wank, 148 Cottage Grove, Highland Park, Mich.; 370, Louis H. Levitsky, 3999 Dickinson Ave., Bronx, N. Y.; 371, Morris Krigelman, 156 DuPont St., Phila., Pa.; 372, Harry L. Schrader, 347 S. Smallwood St., Baltimore, Md.; 373, Nathan Rosen, 1898 Harrison Ave., New York, N. Y.; 374, Arthur C. Kuntz, 4016 Upton Ave., Toledo, O.; 375, Harold Neham, 1122 President St., Brooklyn, N. Y.; 376, John J. Morrissey, 329 Park St., Lawrence, Mass.; 377, George L. Baker, 3031 W. Bancroft, Toledo, O.; 378, John T. Duerkop, 401 Alles Ave., Des Plaines, Ill.; 379, Donald J. Maxwell, 230 W. South St., Akron, O.; 380, L. A. Haluska, 513 N. Monroe St., Peoria, Ill.; 381, Michael M. Colonna, 15 Depot Plaza, Mt. Kisco, N. Y.; 382, Hardy A. Nego, 1909 Lexington Ave., New York, N. Y.; 383, Samuel A. Dreyer, 87 Wolfs Lane, Pelham, N. Y.; 384, George Fioto, 410 Court St., Brooklyn, N. Y.; 385, Myron H. Blotcky, 418 N. St. Paul, Dallas, Tex.; 386, Raymond E. Schmitz, 1330 Kenmore Ave., Buffalo, N. Y.; 387, Carlton W. Cofran, 196 North St., Buffalo, N. Y.; 388, Frank J. La Barbera, Jr., 532—9th St., Brooklyn, N. Y.; 389, Rosalie Lazriowich, Box 14, Iowa City, Io.; 390, Samuel Fuchs, 79 Orange St., Brooklyn, N. Y.; 391, Albert Price, 5003 N. 9th St., Philadelphia, Pa.; 392, Jacob Schweitzer, 113 W. 18th St., New York, N. Y.; 393, Arthur A. Hoehn, 314 E. Grand Ave., Eau Claire, Wis.; 394, Donald F. Johnson, 349 W. Broad St., Hazelton, Pa.; 395, M. Irvin Lipman, 4621 N. 10th St., Philadelphia, Pa.; 396, Reba Nevel, 4800 Westminster Ave., Philadelphia, Pa.; 397, Helen I. Pachuta, 41 S. Maple St., Mt. Carmel, Pa.; 398, Rose L. Parker, 5016 Pulaski Ave., Philadelphia, Pa.; 399, Harry E. Reese, Kennet Sq., Pa.; 400, Samuel Rubinstein, 6052 Delancey St., Philadelphia, Pa.; 401, Rosella V. Rumore, 128 N. 11th St., Easton, Pa.; 402, William W. Whittmer, Jr., First Ave., Runnemede, N. J.; 403, Alan-Gordon Vogt, 621 Pembroke Rd., Bryn Mawr, Pa.; 404, Zosia J. Drozd, 3150 Cedar St., Philadelphia, Pa.; 405, Grellanda Eannaccone, 447 Union Ave., Westbury, L. I., N. Y.; 406, Alton G. Grube, 211 Beyer Ave., Punxsutawney, Pa.; 407, Solomon Wexler, 1420 Ridge Ave., Philadelphia, Pa.; 408, Marie M. Steigerwalt, 3805 Chestnut St., Philadelphia, Pa.; 409, John O. Barnett, 4216 N. 8th St., Philadelphia, Pa.; 410, Francis A. Mladinov, 252 W. 25th Place, Chicago, Ill.; 411, Edward G. Sonnenberg, 167 Main St., Menasha, Wis.; 412, Harry C. Foster, 105 N. Gale St., Indianapolis, Ind.; 413, Jacob T. Keefer, 1638 Arthur Ave., Chicago, Ill.; 414, G. L. Reinhold, 6401 W. 16th St., Berwyn, Ill.; 415, Charles Gutkin, 2659

Broadway, New York, N. Y.; 416, Charles L. Guthrie, 130 South Ave., Petersburg, Va.; 417, Albert M. Keefer, 1638 Arthur Ave., Chicago, Ill.; 418, James C. Grainger, Chattanooga Medicine Co., Chattanooga, Tenn.; 419, John W. Umhau, 831 N. Capitol St., Washington, D. C.; 420, Ellery T. Priest, 868 N. Park St., Columbus, O.; 421, John O. Callahan, 3640 St. Aubin Ave., Detroit, Mich.; 422, Samuel A. Reilly, 309 Park Pl., Irvington, N. J.; 423, Ernest Geiger, New Weston Hotel, New York, N. Y.; 424, S. B. Penick, Jr., 132 Nassau St., New York, N. Y.; 425, A. P. Bopf, 1135–53 Elizabeth Ave., W., Linden, N. J.; 426, W. Wilson McNeary, 1719 Mt. Vernon St., Philadelphia, Pa.; 427, William Paul Luedke, 319 Second Ave., Eau Claire, Wis.; 428, Frank V. Patterson, 2824 Minnesota Ave., Bissings, Mont.; 429, Louis T. Sabatino, 8 Texas Ave., Parkville, Md.; 430, Anthony J. Dobropolsky, 219 N. Belnard Ave., Baltimore, Md.; 431, Walter S. Frost, Burnham Soluble Iodine Co., Auburndale, Mass.; 432, Hubert G. Price, Rex Hospital, Raleigh, N. Car.; 433, Arthur D. Barnes, 1324 Jefferson Ave., Buffalo, N. Y., 434, George C. Mulhauser, 1645 W. Genesee St., Syracuse, N. Y.; 435, Isadore Trunk, 2928 Harding, Detroit, Mich.; 436, Jacob P. Hagen, 1123 Fulton Rd., Canton, O., 437, William W. Hanscom, Jr., 1973 Ocean Ave., San Francisco, Calif.

(*Motion No. 15*) Vote on applications for membership in the ASSOCIATION.

E. F. KELLY, *Secretary.*

THE ASSOCIATION FOR THE ADVANCEMENT OF PROFESSIONAL PHARMACY.

The first regular meeting of the A. A. P. P. was held at the Hotel Pennsylvania, New York City, Tuesday, January 24th, in honor of Dr. Henry V. Arny, with several hundred in attendance. Dr. L. J. Piccoli gave an address of welcome in which he outlined the aims and purposes of the Association. Correspondence was read from leading educators and others prominent in Pharmacy, most of whom had been very helpful in framing the constitution of the Association, and all of whom had shown a deep interest in its purposes.

Dr. Fred Lascoff gave a brief talk on the constitution. Mr. Fred Frankfurter spoke briefly on "Professional Relations." Dr. C. W. Ballard, Dean of Columbia College of Pharmacy, expressed his gratification at having been able to attend, and wished the Association the best of success. The guest of honor, Dr. H. V. Arny, was then introduced. He told the assembly how happy he was to see his dream of twenty-five years come true. Since 1912 he had been advocating such an organization. "I am," he said, "certain of the success of an organization which has had such an auspicious beginning, and particularly glad that I was on hand to help launch it." Dr. Arny stated that his services and advice were always at the disposal of the organization.

Dr. Arny was then informed of his election as the first Fellow of the Association for the Advancement of Professional Pharmacy and Mr. Frankfurter presented him with a framed copy of the Code of Ethics of the A. PH. A. as emblematic of the honor.

Mr. Cyrus D. Hakes, chairman of the Constitution Committee told of the great amount of time and thought that had been given to the constitution. He emphasized the fact that the final draft had not been drawn and asked for comment and suggestions.

Other guest speakers were then introduced: Dr. Edmund Branower, dentist; Dr. Harry Goldwag, Professor of Materia Medica at the first Institute of Podietry; Mr. A. Lichterman, representative of the Department of Health of New York City; and Mr. Michael Petix, optometrist. Each spoke of the relation of his branch of Public Health to the pharmacist.

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The second regular meeting was held at the Hotel Dauphin, 67th St. & Broadway, New York City. About 100 pharmacists met for dinner at 7:00 P.M., and the business meeting followed. The guests included Dr. E. Fullerton Cook, chairman of the revision Committee of the U. S. P.; Dr. J. Leon Lascoff, president of the A. PH. A.; Dr. C. W. Ballard, dean of the Columbia College of Pharmacy; Dr. Walter Bastedo, president of the U. S. P. Convention; Rev. Charles Deane, S.J., regent of the Fordham College of Pharmacy; Dr. Charles Lieb, professor and head of Pharmacology of the College of Physicians and Surgeons of Columbia University; Dr. E. F. Kelly, secretary of the A. PH. A.

Dr. E. F. Cook spoke on "Professional Pharmaceutical Service." He emphasized the need in this country for professional pharmaceutical establishments and said that the pharmacist must be willing to sacrifice both time and profits to see that the residents of his community are properly served. Dr. J. Leon Lascoff thanked Dr. Cook and assured him that the members of the ASSOCIATION would do everything possible to uphold the standards of professional Pharmacy.

The president announced that the next meeting on March 28th would consist of a Symposium on Ophthalmic Preparations.

IRVING KANTOR, *Secretary.*

PROCEEDINGS OF THE LOCAL AND STUDENT BRANCHES

ALABAMA POLYTECHNIC INSTITUTE STUDENT BRANCH.—The regular meeting was called to order at 7:00 P.M. January 10th, by President J. L. Meigs. The roll was called and the minutes read.

It was then proposed that application be made for a charter as a Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION. A few remarks concerning this proposal were heard from Professors Blake and Hargreaves, followed by a general discussion. It was then definitely decided to apply for a charter, and the proposed constitution of the Student Branch was read and unanimously approved. The following officers of the proposed organization were then elected:

President, George S. Hiller; *Vice-President*, Charles R. Barron; *Secretary*, Benjamin J. Eich; *Treasurer*, Wm. P. Swift, Jr.; *Faculty Advisor*, Prof. G. W. Hargreaves.

The newly-elected president assumed the chair, and after a few remarks from the other newly-elected officers, he announced that he would withhold committee appointments until the next meeting. The president extended thanks to the seniors in the School of Pharmacy for their work in preparing the constitution.

The committee previously appointed for organization of the Student Branch was instructed to submit the constitution and write at once for a charter. Professor Blake suggested that a formal installation banquet be held as soon as the charter arrived.

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The first meeting was held on Monday evening, February 13, 1939. The minutes of the previous meeting, covering the organization of the Branch, were read and approved.

President Hiller introduced Mr. C. D. Croxton as a new member. It was decided that Mr. Croxton would be included among the charter members.

The following committee appointments were announced: Program Committee, O. L. Thagard, Jr., Chairman, Charles R. Barron, L. E. Godwin; Committee on Science and Practice of Pharmacy, J. L. Meigs, Chairman, Beth Murphy, A. H. Lurie; Membership Committee, W. C. Dow, Chairman, T. H. Cox, A. C. Sansing.

Mr. Thagard introduced the speaker for the evening, A. F. Mickel of the Department of Pharmacy, who spoke on Public Health in Alabama, bringing out particularly the main points discussed in a recent conference of Alabama Public Health Officials in Montgomery. President Hiller thanked the speaker on behalf of the members for his interesting and informative talk.

Professor Blake announced that unless other plans were made the usual meeting of Alabama Pharmacists in Auburn would not take place and suggested that the annual banquet be held in connection with the proposed installation meeting of the Student Branch. President Hiller appointed a committee to investigate the possibilities of a banquet and installation meeting.

BEN EICH, *Secretary*.

CHICAGO.—The January meeting was held on the 17th, with President Emig presiding. Reports were made by the Committee on Resolutions, Dr. Webster, Chairman, as follows:

"WHEREAS, it has pleased the Master of Men to call home from his labors our beloved friend and esteemed member, William Baker Day, and

WHEREAS, his high ideals, his tireless efforts for the advancement of Pharmacy and his helpful kindness to all have left an imperishable monument in the hearts of all who knew him;

Be It Resolved, that the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION extends to the family of William Baker Day its deepest sympathy in their sorrow."

Following this the Committee on Nominations reported the following candidates who, after a vote, were declared elected for the year 1939–1940: *President*, Lawrence Templeton; *Vice-Presidents*, Charles F. Lanwermeyer, R. A. G. Linke, Ernst Kirsh; *Secretary-Treasurer*, Edward Vicher; *Delegate to the House of Delegates*, William Gray.

After several matters of minor importance, the meeting was turned over to five members of the Senior class of the College of Pharmacy who discussed the relationship of Socialized Medicine to the future of Pharmacy. Acting as Master of Ceremony, Mr. Hubert Nudd introduced the topic with a well-chosen outline of material. Speaking for the affirmative side, Mr. Sidney Roth spoke on the necessity for more adequate medical care and gave examples of those systems now in

use in the United States in various communities. Following this Mr. Charles Mrazek, Jr., spoke on the negative side pointing out the results of Socialized Medicine in the practice of the healing arts. Mr. Samuel Tenner then discussed the affirmative question followed by Mr. Louis Levensbaum who summed up the negative aspects. Short rebuttals were given by each member of the group and then the subject left open for some discussion. Because of the highly controversial nature of the topic no attempt was made to judge either on the presentation or subject matter of the debate, the audience being asked to choose for themselves which group they thought did a better job.

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The regular monthly meeting was held Tuesday evening, February 21st, in the College of Medicine building. The speaker was Dr. H. C. Christensen who is one of the two members of the Branch who have been awarded the Remington Medal. Due to illness, Professor E. N. Gathercoal, the other recipient, was unable to be present.

Preceded by an informal dinner at the Professional Y. M. C. A., the meeting was opened by President Emig with a short biographical sketch of the speaker.

Dr. Christensen took as his subject the necessity of informing the public on what Pharmacy is and what it stands for. Stressing the dual function of the pharmacist, he pointed out that only by proper balance would the future be assured. One of the best ways to acquaint the public with the importance of Pharmacy is through exhibits such as used at the Century of Progress Exposition, etc. Out of this and other exhibitions attended by the laity could come much good. However, since these fairs are short lived, their effects only reach the group who attend them. In order to extend the results, Pharmacy is fortunate in being included in the permanent exhibit of the Medical Sciences in the Rosenwald Museum of Science and Industry now being installed in Chicago.

This Rosenwald Museum occupies the remodeled Fine Arts Building of the Columbian Exposition of 1893, covering 13 acres of floor space and with eight miles of exhibit aisles and is to be a storehouse of material for future generations. The Medical Sciences are to occupy the First Balcony in the center or main section. In this group Pharmacy is to have a space 76 by 26 feet in which will be placed an exhibit emphasizing the education and training of the pharmacist and his services to the public.

Visited by thousands of people each year this exhibit will be of permanent value in bringing Pharmacy before the public in its proper aspect; furthermore, this exhibit will set a pattern for the other museums of this type which will be developed in other cities. R. E. TERRY, *Secretary.*

FERRIS INSTITUTE STUDENT BRANCH.—The monthly meeting was held on January 11th, with President Ida Mary Fox presiding. The minutes of the last meeting were read and approved.

In order to coöperate with President Lascoff's special drive to increase the membership of the ASSOCIATION, it was decided that the next session would be devoted to a presentation of the purpose, present activity and accomplishments of the A. PH. A. Micheal McNab was appointed chairman of this meeting.

Mr. Pangborn led a short discussion on an editorial appearing in a local paper about the work of Congressman Patman, co-author of the Robinson-Patman Act.

Following this discussion Dr. Anton Hogstad, Jr., instructor in retail pharmacy management, delivered a lecture entitled, "Little Journeys in Pharmacy." The journey took us through various famous pharmacies in the United States and Canada. Mr. Hogstad pointed out the achievements of the pharmacist and gave reasons why each enjoyed his individual success. The speaker also talked briefly on some of the leading pharmacy colleges in this country. Slides of each pharmacy and pharmacy college mentioned were shown while each particular institution was being discussed.

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The monthly meeting was held February 15th, at 11:00 A.M. The purpose of the meeting was to present the highlights of the A. PH. A. to the other members of the student body of the Ferris College of Pharmacy in an effort to interest them in the organization.

The meeting was opened by the President, Miss Ida Mary Fox. At this time Mr. Engmark announced that the next session would be held March 8th with a representative from the Upjohn

Co. as the speaker. Ruth Thatcher was appointed as chairman of the refreshment committee for that gathering.

Micheal McNab discussed the history and purpose of the A. PH. A. He related the achievements of the organization as well as citing its goals. Mr. McNab also pointed out the benefits derived by the student belonging to such an organization as the A. PH. A. and to its Student Branch. LESLIE KIEFT, *Secretary.*

GREATER ST. LOUIS.—The February meeting was held on the 13th, at 8:00 P.M., at the St. Louis College of Pharmacy. Mr. Charles E. Caspari, Jr., an attorney-at-law and son of Dean Charles E. Caspari of the St. Louis College of Pharmacy, was the speaker of the evening. His subject was the recently enacted Federal Food Drug and Cosmetic Act. Mr. Caspari as an attorney at law and in the employ of the Monsanto Chemical Co., was present in Washington when hearings were held concerning proposed regulations.

The business portion of the meeting was deferred until March, at which time an election of officers will be held. FRANK L. MERCER, *Secretary.*

LOYOLA UNIVERSITY STUDENT BRANCH.—The regular monthly meeting was held Thursday evening, February 9th, in Bobet Hall, with Joseph Ernst, vice-president, presiding. Roll showed thirty-five members and twelve guests in attendance.

Mr. Vinci, chairman of the Program Committee, emphasized that his committee endeavors to work up interesting programs for the meetings and requested that members coöperate more, so as to improve such programs. The Publicity Committee, under its new chairman, Miss Rose Mary Bertin, promises to give a news story for every meeting held by the Branch or its committees. These stories, even though they are not published in school and local papers, will be kept as a permanent "news record" of the activities of the Branch. For the Membership Committee, Miss Heiman reported plans to prepare a neatly designed booklet, "History of the Formation of this Branch With its Objectives and Major Activities," to be given to the incoming pharmacy students at the beginning of each year, preceding the annual membership drive. The committee also plans a questionnaire sheet to find out the interests and abilities of the new students. (Due to Miss Heiman's injury, this report was read by Miss Strain, who is acting as chairman of the Membership Committee.) Miss Helen Pitre, chairman of Entertainments submitted a proposal for a social to be given one week from date and for Banquet and Dance at the close of the scholastic year. A committee composed of Misses Ware, Centanni and Pitre was appointed to send flowers to Miss Heiman who had been injured in an automobile accident.

The "Special Program" of the meeting was opened with a lecture given by Mr. Paul Bailey, professor of Chemistry at Loyola University, who spoke on "Radium," giving a clear picture of its History, Derivation and Occurrence. He explained the work of the Curie's, showed how radium is derived from the radio-active elements, and pointed out that it is used successfully in the treatment and cure of malignant growths.

Dr. J. O. Weilbaecher, a prominent local physician, spoke on, "What the Physician Expects of the Pharmacists." He contrasted what the physicians expect of the pharmacists, giving us case examples including a scrupulously clean store, no counter-prescribing, uniform narcotic regulations, secrecy concerning ailment of clients, elegant preparations and an adequate supply of diphtheria culture tubes, test-tubes, slides, etc. A lively discussion of both papers followed.

ROSALIE CENTANNIE, *Secretary.*

MICHIGAN.—The January meeting was held Tuesday evening, January 24th, in the Wayne County Medical Society Building. It was preceded by a testimonial dinner to Dr. F. O. Taylor, vice-president-elect of the AMERICAN PHARMACEUTICAL ASSOCIATION. Sixty members and friends of the Michigan Branch attended the dinner to do honor to Dr. Taylor.

After the dinner Dean R. T. Lakey, chairman of the Program Committee, introduced Dr. Leonard A. Seltzer, the dean of the Michigan Branch and one of the organizers and staunch supporters who paid tribute to Dr. Taylor and outlined briefly his career since his early school days in Illinois, thence through High School and the University of Michigan. From there he entered the employ of Parke, Davis & Co. His success is manifested by the important position he now holds, Chief Chemist of the largest manufacturer of pharmaceuticals in the world. Dr. Seltzer and Dr. Taylor attended the same schools and University and both entered the employ

of Parke, Davis & Co. Dr. Seltzer also emphasized the many contributions of Dr. Taylor in his work on various committees of the A. PH. A., and expressed the sentiment of the Michigan Branch who are proud and very happy to have Dr. Taylor, a member of the Michigan Branch, elected to the high office of vice-president of the A. PH. A.

Dean Lakey then introduced Mr. William Murray of the Sales Department of Parke, Davis & Co., who told of the high esteem in which Dr. Taylor is held by his company and the importance attached to his responsible position as Chief Chemist. Dr. Taylor replied by thanking the Michigan Branch for the testimonial. The large and enthusiastic gathering which filled the room to overflowing, numbering more than 150, was a splendid tribute to vice-president-elect, Dr Taylor.

The business meeting of the Michigan Branch followed, President Smith presiding. The minutes of the previous meeting were read by the secretary and approved.

President Smith then introduced the speaker of the evening, Dr. Taylor, who spoke on the many problems of the Federal Food, Drug and Cosmetic Act, which was signed on June 25, 1938, and is to become effective June 25, 1939, giving the industry time to adjust itself. Regulations for the enforcement of the Act were issued about January first and interpret the provisions of the law. Many of the sections are of interest to Pharmacy. The important new section of the act seems to be the one pertaining to new drugs, the first of this kind in any law. The labelling provisions will require a complete change of labels. Dr. Taylor went into much detail explaining and reading the many regulations which also include cosmetics. A general discussion followed bringing out many interesting and important points of the law as it affects Pharmacy and pharmacists. Those entering into the discussion were J. Verne Crandall, John H. Webster, Ralph J. Mills, Ernest Crandall, Mr. Tarbell, R. L. McCabe, Harvey A. K. Whitney and Dean R. T. Lakey. Dr. Taylor answered the many questions which closed the discussion. President Ira Smith suggested a rising vote of thanks to Dr. Taylor for his enlightening talk, which was enthusiastically given.

Under new business Dean R. T. Lakey spoke of the many rumors existing regarding the status of the Board of Pharmacy in Michigan and introduced a resolution to the effect that the Michigan Branch of the A. PH. A. go on record in opposition to using the Michigan Board of Pharmacy as a political football, to be sent to the Governor. The resolution was seconded by Ernest Crandall and carried unanimously.

Mr. R. L. McCabe then announced the sudden death of Nicholas Drugociu, a member of the Michigan Branch, and offered a resolution that the Detroit Branch send flowers to the funeral home expressing the sentiments of the Branch. The motion was seconded by L. A. Seltzer and carried.

Professor Glover then in the name of the College of Pharmacy of the University of Michigan invited the Branch to hold the May meeting in Ann Arbor on May 16th, in conjunction with the Annual Pharmaceutical Conference sponsored by the College of Pharmacy of the University of Michigan.

BERNARD A. BIALK, *Secretary*.

NORTHERN NEW JERSEY.—The Branch met at Rutgers College of Pharmacy Friday evening, January 27th.

The evening was devoted to the discussion of "Pneumonia." Dr. Charles V. Craster, of the Newark Board of Health, spoke informally of the problems of the physicians in combating diseases that are ranked as major killers in this country. Pneumonia was rated third in the list of fatal diseases. Dr. Craster mentioned sulpyridine as a drug that shows some promise of being of value in the treatment of pneumonia, but stated that it is still in the experimental stage. At present pneumonia serum is the best weapon in the hands of the medical profession. As there are twenty-five or thirty strains, or types, of the organism that causes pneumonia, and each type appears to require a specific serum for that type, the necessity of being able to identify the type involved becomes apparent. Dr. Craster then introduced Dr. Henry Simon, technician of the Board of Health Laboratories.

Dr. Simon described the early methods and the latest methods used for identifying or typing the organism present in the pneumonia patient. Statistics were cited showing that the patient's chances for recovery, and the speed of the recovery, were greater if early administration of the serum were made. The Chief of the Bureau of Communicable Diseases, Mr. Gary St. John, then described the hook-up between the hospitals, doctors and the radio police of the city and state. By this coöperation has been facilitated the speedy collection of the sample from the patient,

typing, prescribing and dispatching the serum to the patient. Dr. Roberts exhibited a film showing the latest equipment and methods used in the treatment of pneumonia.

At the meeting of December 19th Prof. George C. Schicks spoke about "Marihuana," its growth, cultivation, active constituents, uses and its abuses. The talk was illustrated by exhibits of the drug and by the products of the drug as used by the addicts. C. L. Cox, *Secretary.*

NORTHERN OHIO.—The first monthly meeting of the current year was held at the Faculty Club of Western Reserve University, Cleveland, Ohio, on the evening of January 13, 1939. Mr. C. S. Stonebraker, the newly elected president of the Branch, announced the membership of Committees on Policy, Practice, Membership, Bulletins to Physicians, Program and Publicity.

The Branch agreed to continue its monthly dinner meetings and to invite a guest speaker every other month. At alternate meetings members will volunteer to lead discussions; on failure to do so, the Chair will designate a leader.

The first guest speaker of the year was Doctor Joseph Seifter of the Western Reserve Medical School Faculty. Dr. Seifter discussed the chemistry and therapeutics of the barbiturates and their various mixtures now appearing on the market.

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The February dinner meeting was held at the Faculty Club of Western Reserve University on the evening of February 10, 1939.

This meeting was given over to the discussion of bulletins that are to be mailed to the practicing physicians of greater Cleveland. Bulletin No. 1 for 1939 deals mainly with significant features of the new Federal Food, Drug and Cosmetic Act, especially the ruling in regard to sulfanilamide, cinchophen and aminopyrine. Bulletin 2 deals with certain significant features of the multitude of barbiturate mixtures now appearing on the market under trade names.

In addition there was a discussion under the title "Who owns the drug business?" This discussion brought attention to the tendency of many manufacturing drug concerns to come under the financial control of huge drug syndicates. N. T. Chamberlin, *Secretary.*

NORTHWESTERN.—The Branch held three meetings during February in order to take advantage of the presence of lecturers and motion picture films for the Third Pharmaceutical Institute of the University of Minnesota. All meetings were held in the auditorium of the College of Pharmacy of the University of Minnesota. The dates of the meetings and programs were as follows: February 6th, Mr. F. E. Bibbins, Eli Lilly and Co., Indianapolis, Ind., spoke on "Pharmaceutical Manufacturing;" February 7th, Dean R. A. Kuever, Iowa City, Ia., on "Opportunities for a Pharmaceutical Graduate;" February 9th, Motion Picture Film: "The Anemias," courtesy Eli Lilly and Co., Indianapolis, Ind.

No business was transacted at any of the meetings. Chas. V. Netz, *Secretary.*

WESTERN NEW YORK.—The February meeting was held in Foster Hall, on the University of Buffalo campus, Thursday, February 9, 1939. The nominating committee presented the following recommendations as officers for the coming year: *President*, Raymond E. Schmitz; *First Vice-President*, Mearl D. Pritchard; *Second Vice-President*, S. Walley Bower; *Secretary-Treasurer*, Dr. Margaret C. Swisher; *Delegate*, Dr. George W. Fiero. The report of the committee was adopted and the secretary was instructed to cast one ballot for each of these candidates.

Dr. Harold G. Hewitt then introduced the speaker, Dr. Ralph W. Clark of the Pharmacy Service Division of Merck and Co., whose topic was "New Organic Therapeutic Compounds." The chief compounds discussed were the synthetic vitamins, the mandelates, sulfanilamide and sulfapyradine, as well as many others.

Following the lecture another interesting "question and answer" period took place, the questions from the audience being answered by Dr. Clark and L. Maxwell Lockie, Ph.G., M.D., Associate in Medicine at the University of Buffalo School of Medicine.

The next meeting will be held Thursday evening, March 9, 1939 at eight o'clock in the same place. W. A. Jamieson, Director of the Biological Division of Eli Lilly and Co., will discuss "The A. B. C.'s of Biologicals." Laurence D. Lockie, *Secretary.*

PERSONAL AND NEWS ITEMS.

The annual Pharmaceutical Symposium of the College of Pharmacy, University of Iowa, Iowa City, Iowa, was held on March 16th and 17th. Among the interesting features of the Program were: "Newer Conceptions of Antiseptics," by Edgar B. Carter, N. Chicago, Ill.; "Relationship of Pharmacological Action and Chemical Structure of Barbituric Acid Derivatives," E. E. Swanson, Indianapolis, Ind.; "Vitamins and the Pharmacist," R. A. Hardt, New York City; "Buying and Selling Problems in Retail Drug Stores," L. L. Shoemaker, Dayton, O.; "Federal Food Drug and Cosmetic Act," W. A. Moerschel, Iowa City, Io.; "Syringes, Needles and Thermometers," W. J. Merian, Rutherford, N. J.; "Rubber Goods and Plus Profits," W. E. Powell, Akron, O.; "Brushes and Bristles," George D. Prigmore, Chicago, Ill.; "Promoting the Prescription Department," J. W. Snowden, Aurora, Ill.; "Operating a Soda Fountain for Profit," H. B. Dickens, Rochester, N. Y.

The annual Pharmaceutical Symposium of the School of Pharmacy, Medical College of Virginia, Richmond, Va., will be held in that city on March 8th. The chief feature of the program will be a discussion of Socialized Pharmacy. Dr. E. F. Kelly, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, will open the discussion, and will be followed by Mr. A. L. I. Winne, secretary of the Virginia Board of Pharmacy.

The Willard Gibbs Medal of the Chicago section of the American Chemical Society, one of the highest scientific honors bestowed in the United States, has been awarded for 1939 to Dr. Donald Dexter Van Slyke, research chemist of the Rockefeller Institute for Medical Research, New York.

Manufacturers of dangerous drugs have been notified by the Food and Drug Administration that such products must bear warning labels so conspicuous as to arrest attention of the ordinary consumer, and that many products now on the market do not have a warning label which meets the requirements of the new Food, Drug and Cosmetic Act.

On Friday, February 24th, at the Fordham College of Pharmacy, Dr. Charles Higgins, the eminent authority on biologicals, lectured on "Pneumonia," the methods of typing pneumonia germs and the use of specific type serums for the treatment of the disease. The lecture was accompanied by a motion picture film illustrative of the steps outlined. This is the third motion picture shown this year for practical demonstration of laboratory work at Fordham

The Massachusetts College of Pharmacy entertained the New England Association of Chemistry Teachers when some two hundred delegates from all over New England assembled for their 191st meeting. An all-day program revealed by lectures and demonstrations how closely connected to-day are the formerly independent fields of Chemistry, Pharmacy and Medical Science, and how fundamental a part Chemistry plays in the various careers found in public health service.

After a message of greeting from Dean H. C. Newton, delegates heard demonstration lectures on: "Chemistry in Filling Prescriptions," "Chemical Mediation of Nerve Impulses" and "Chemistry of the Choline Derivatives," by Professors L. M. Ohmart, Howard L. Reed and Charles W. Bauer of the College faculty. Following process demonstrations in the laboratories, inspection of the building and luncheon in the College cafeteria, the afternoon program included lectures on "The Relationship between Chemical Constitution and Physiological Action," by Dr. Soma Weiss of the Boston City Hospital and Harvard Medical School, and "Chemistry in Pharmaceutical Manufacture" by Dr. Eldin V. Lynn, Chairman of the Department of Chemistry, Massachusetts College of Pharmacy.

Dr. Walter A. Bastedo addressed the lecture series being conducted in the College of Pharmacy, Fordham University, under the direction of Dr. Leonard Piccoli, on the subject of "The Relation of the Pharmacist to the Physician." He is a nationally known authority on Pharmacology and author of the widely known text "Materia Medica, Pharmacology and Therapeutics," is associated with both Cornell and Columbia Universities, is President of the United States Pharmacopœial Convention which extends from 1930 to 1940 and is a physician on the staffs of St. Luke's, St. Vincent's and City Hospital, in New York City.

At the request of the health authorities of one of the Latin American Republics, the Pan American Sanitary Bureau is trying to secure a number of American nurses familiar with Spanish, and, if possible, trained in care of mental cases. The contracts offered these nurses will be for two years, and the transportation expenses incurred in reaching their destination will be paid.

American nurses have made quite a name for themselves in a number of countries where they helped to organize hospital and public health services, as, for instance, Cuba, Chile, Colombia and Panama, etc. In fact, in some countries, such as Argentina and Uruguay, the English term "nurses" is used in preference to its Spanish equivalent, "enfermera."

"Wuxtra," published by Grand Street Boys' Association, carried a two-column article on Dr. J. Leon Lascoff, President of the AMERICAN PHARMACEUTICAL ASSOCIATION in their February issue.

The British Pharmaceutical Conference will meet for the seventy-sixth time on July 17–21, 1939, in Birmingham. A very interesting program has been prepared.

The tenth annual Tri-State Hospital Assembly will be held at the Stevens Hotel in Chicago on May 3, 4, 5, 1939. This assembly is composed of the hospital associations of Illinois, Indiana and Wisconsin, with the Michigan Hospital Association as a guest for the present year. In addition to the four large state hospital associations, twenty-five separate organizations and groups of hospital workers will participate. Each of these groups will have a separate program.

The American Medical Association will hold its annual convention in St. Louis, Mo., May 15–19, 1939. An invitation is extended to all members of hospital staffs.

The 41st annual convention of the N. A. R. D. will be held on October 9th to 13th, in St. Paul, Minn. Official hotel headquarters will be at the St. Paul with the Drug Show and the business sessions to be held in the St. Paul Municipal Auditorium, just a block away.

The Frances E. Willard Hospital, of Chicago, Ill., is now under the management of The Sisters of St. Casimir and will now be known as the Loretto Hospital.

The Sixth District of the A. A. C. P. and the N. A. B. P. will hold its annual meeting at the Biltmore Hotel in Oklahoma City, March 8th and 9th. The Oklahoma State Board of Pharmacy and the College of Pharmacy of the University of Oklahoma will be hosts for this meeting. The Mayor of the City of Oklahoma will make an address of welcome and Governor Phillips, of Oklahoma, will speak in the evening.

A retail druggist of Arizona, **Robert T. Jones,** was recently inaugurated as Governor. He at one end of the country and **Governor Claude Barrows of Maine,** have the distinction of being the only druggist-governors in service to their respective states. Druggists throughout the country wish them success.

The New Jersey Pharmaceutical Association will meet June 27–30, 1939, instead of June 20–23, as previously advertised, due to the fact that Pennsylvania and New York State Associations are holding their conventions the third week in June. The Ritz-Carlton Hotel, Atlantic City, will be headquarters.

Dr. E. Fullerton Cook, of the Philadelphia College of Pharmacy and Science, will address the student body of the School of Pharmacy, University of North Carolina, on the evening of April 17th.

Druggists of Alabama were successful in leading the fight for the enactment of a state Fair Trade Act in the legislature this session. As a result Alabama becomes the forty-fourth state to embrace Fair Trade legislation.

Dr. H. A. B. Dunning, of Baltimore, Md., has donated $75,000 to Washington College, at Chestertown, Md., for the erection of a new science building to be known as the Dunning Science Building. Laboratories for the Departments of Chemistry, Biology and Physics will be provided. The building will be dedicated to two great modern scientists, Dr. Ira D. Remsen and Dr. John Jacob Abel. Dr. Dunning also provided a scholarship tenable at the College, and open to advanced students from Caroline County, Maryland, where he was born.

Synthetic levorotatory ephedrine, produced by whatever process desired, so long as it meets the physical and chemical tests specified in the U. S. P. XI, is now Official, and may be used interchangeably with ephedrine derived by extraction of plants of the ephedra species, Dr. E. F. Cook, Chairman, U. S. P. Committee of Revision announced.

OBITUARY.

ELMER H. HESSLER.

Elmer H. Hessler, president of G. S. Stoddard & Co., Inc., pharmaceutical manufacturers, New York City, died on Sunday, February 19th, at his residence in Bayside, L. I., after a brief illness.

A graduate of the Philadelphia College of Pharmacy, Mr. Hessler joined his company as general manager and vice-president in 1921 and was made president in 1936. He was very active in church and masonic work, being a member of the Vestry of All Saints' Episcopal Church in Bayside and a Past Master of Bayside Lodge No. 999, F. and A. M., also a member of Unity Chapter No. 328, R. A. M and Trinity Commandery No. 682.

Mr. Hessler was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION and at one time secretary of its Philadelphia Branch; of the American Pharmaceutical Manufacturers Association, in which he served on several committees; and of the Philadelphia College of Pharmacy Alumni, being its vice-president. He was a member of the Pennsylvania Society, the Pennsylvania German Society, the National Geographic Society and of the Drug and Chemical, Sales Executives, Pharmaceutical Advertising Directors, Bayside Yacht and Salisbury Golf clubs.

Mrs. Elizabeth (McLanahan) Hessler survives him, also two sons Ormond and Robert.

BOOK NOTICES AND REVIEWS.

Sanitization of the Drinking Glass. Published by the National Association of Sanitarians, Inc., 678 S. Ferris Ave., Los Angeles, Calif. The booklet of sixty pages has been prepared in two parts: Part I, "Methods and Procedures," by Jack G. Baker, Chief of Food and Drug Department of Public Health, San Diego, Calif. and President, National Association of Sanitarians, Inc. Part II, "Practical Control," by Raymond V. Stone, Director of Bureau of Laboratories, Department of Public Health, Los Angeles County, in California.

The hope of the authors is to have this effort result in standard methods for the scientific laboratory examination of drinking glasses and other utensils. The authors have been aided by K. F. Meyer, Ph.D., M.D. of the University of California. The subjects have been systematically and interestingly presented; references are given to twenty-one papers and reports. The subjects discussed are of great interest to the households and all activities dealing with foods, drugs and beverages. The booklet may be obtained from the publishers.

p_H Papers. The Most Practical Method for the Determination of p_H Value in Acid and Alkaline Solutions. Time saving, accurate and convenient. Results in a few seconds for all aqueous solutions and for the entire p_H range. Of equal convenience in the laboratory or for the control of industrial operations. Ask for quotations. Paul Frank, 456 Fourth Avenue, New York City.

Field Manual in Toxicology for Agricultural Workers, by CLINTON H. THIENES, M.D., Ph.D., professor of Pharmacology, School of Medicine, University of Southern California. The book, in paper cover, has been submitted by Edwards Brothers, Inc., Ann Arbor, Michigan and the price of $1.00 is made possible by photo-lithography from perfect transcript. It was written at the request of the Los Angeles County Agricultural Commission for the use of field workers.

The author invited criticisms from various sources. Among these W. C. Jacobson, supervisor of Rodent Plague and Weed Control; F. E. Garlough and Justus F. Ward, of the Control Methods Research Laboratory, Bureau of Biologicals, United States Department of Agriculture; James F. Couch, Chemist, Bureau of Animal Industry, U. S. Department of Agriculture; James C. Munch, H. B. Haag, etc.

The subjects consider caustic, metallic, mineral, organic poison, First Aid, etc., and these are freely discussed and make this a valuable booklet for agricultural workers.

Kurzes Lehrbuch der Pharmazeutischen Chemie, by DR. K. BODENDORF, professor at the University of Berlin and for a time Director of the Institute for Pharmaceutical Chemistry at the University Istanbul. Published by Julius Springer, Berlin W 9, Linkstrasse 22–24. Price, Rm. 24 in paper and bound, Rm. 25.80. The author considers the need of Chemistry in the study of Pharmacy and has presented a valuable volume complete in the study and systematic arrangement of about four hundred pages with an index of about eighteen hundred items, which indicates the extensive study that has been well and carefully presented. It is published in German and to some extent limits its use, but it will find a place in pharmaceutical and chemical libraries. The leaves of the book should have been cut; the discussions and presentations of the subjects deserve commendation.

PREPARATION OF PAPERS.

All manuscripts should be typewritten in double spacing on one side of paper $8^1/_2$ x 11 inches, and should be mailed in a flat package—not rolled, to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., Washington, D. C. The original and one copy must be sent together with an abstract of not more than 250 words. The abstract should include a summarization of the conclusions and recommendations, if any, reached by the author or authors of the paper. The original drawings, not photographs of drawings, should accompany the manuscript. Authors should indicate on the manuscript the approximate position of text figures. All drawings should be marked with the author's name and address.

A condensed title running page headline, not to exceed thirty-five letters, should be given on a separate sheet and placed at the beginning of each article.

The method of stating the laboratory or other place in which the work is done should be uniform and placed as a footnote at end of first page, giving Department, School or College, etc. The date when received for publication should be given.

Numerals are used for figures for all definite weights, measurements, percentages, and degrees of temperature (for example: 2 Kg., 1 inch, 20.5 cc., 300° C.). Spell out all indefinite and approximate periods of time and other numerals which are used in a general manner (for example: one hundred years ago, about two and one-half hours, seven times).

Standard abbreviations should be used whenever weights and measures are given in the metric system, *e. g.*, 10 Kg., 2.25 cc., etc. The forms to be used are: cc., Kg., mg., mm., L. and M.

Figures should be numbered from 1 up, beginning with the text-figures (line engravings are always treated as text-figures and should be designed as such) and continuing through the plates. The reduction desired should be clearly indicated on the margin of the drawing. All drawings should be made with India ink, preferably on white tracing paper or cloth If coördinate paper is used, a blue-lined paper must be chosen. Usually it is desirable to ink in the large squares so that the curves can be more easily read. Lettering should be plain and large enough to reproduce well when the drawing is reduced to the width of a printed page (usually about 4 inches). Photographs intended for half-tone reproduction should be securely mounted with colorless paste.

"Figure" should be spelled out at the beginning of a sentence; elsewhere it is abbreviated to "Fig.;" per cent—2 words.

The expense of figures and plates, not exceeding three, will be borne by the JOURNAL; expense for cuts in excess of this number must be defrayed by the author.

References to the literature cited should be grouped at the end of the manuscript under the *References*. The citations should be numbered consecutively in the order of their appearance (their location in the text should be indicated by full-sized figures included in parentheses). The sequence followed in the citations should be: Author's name (with initials), name of publication, volume number, page number and the date in parentheses, as follows:

(1) Author, A. Y., *Am. J. Physiol.*, 79, 289 (1927).

Papers presented at the annual meeting become the property of the Association and may at the discretion of the Editor be published in the JOURNAL. Papers presented at the annual meeting or those accepted by the JOURNAL may be published in other periodicals only after the release of the papers by the Board of Review of Papers of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Editor will appreciate comments from Board of Review and Committee on Publication, members, authors and others interested.

F. J. CERMAK.